AMERICAN GAS

Association

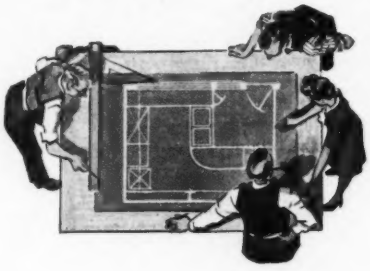
MONTHLY

JULY-AUGUST 1945 • VOL. 27 · NO. 7 AND 8

You Pine...

Ah!... wouldn't it be wonderful to work in a brand new, really *modern* kitchen. So efficiently planned, things would get done in half the time. So clean and cool and beautiful you wouldn't *mind* working in it!

We Design...



This is the floor plan of just *one* of the Gas industry's "New Freedom Gas Kitchen"* designs! Each one is cram-packed with time-saving, work-saving ideas ... each one is scientifically planned to cut down on "leg-work", dirt, heat ... yes, even hard-to-kill cooking odors! When—after the war—you build a new kitchen—or re-model your old one—we'll be ready with dozens of ideas that'll fit your needs exactly!

and here it is!

ANOTHER "NEW FREEDOM GAS KITCHEN" DESIGN

... a kitchen where work takes wings!

Everything's easier in your "New Freedom Gas Kitchen" of tomorrow! **COOKING'S EASIER** ...You'll have a marvelous new Gas range ... fast, efficient, and so completely automatic it'll cook a *delicious* meal even when you're miles away. Remember—no matter what "make" you buy—if it bears the CP seal you can be sure it's built to the very highest standards of leading home economists and cooking experts! **FOOD STORAGE IS EASIER** ... Your new silent Gas refrigerator will be roomier than ever ... designed to keep all kinds of food fresh longer! **CLEANING-UP IS EASIER** ... Your economical new Gas hot water system will keep oceans of hot water always on tap for dishes ... laundry ... baths! Start planning your "New Freedom Gas Kitchen" now ... *today!*

GAS

THE WONDER FLAME THAT COOLS AS WELL AS HEATS

AMERICAN GAS ASSOCIATION

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*Copyright 1945, American Gas Association

The gas industry's big push for its place in the postwar sun is well under way. Last month we presented the overall picture of the mechanism set up to administer the funds which provide the ammunition in the industry's development plan. In this issue, E. P. Noppel, chief research coordinator, fills in some of the background in the broad research strategy. There are so many separate projects that even a bare outline fills many pages but they are essential reading for those who want to know "where to now?" . . . Another phase of the industry's program, national advertising, is described in a separate article. With double appropriations the gas message will be carried more often and in channels never before used. . . . One of the most important features of this issue involves names and faces—those of the men who have been selected to direct A. G. A. activities in the coming year. They're a fine-looking bunch and merit wholehearted support from the ranks. . . . Several of the technical articles herein strike deep to the heart of the industry's operating problems. Especially valuable are Peacock's paper on LP gas, Henry's on house heating, Beck's on winter-summer water heating, and Schmidt's & Seymour's on coal surface moisture.

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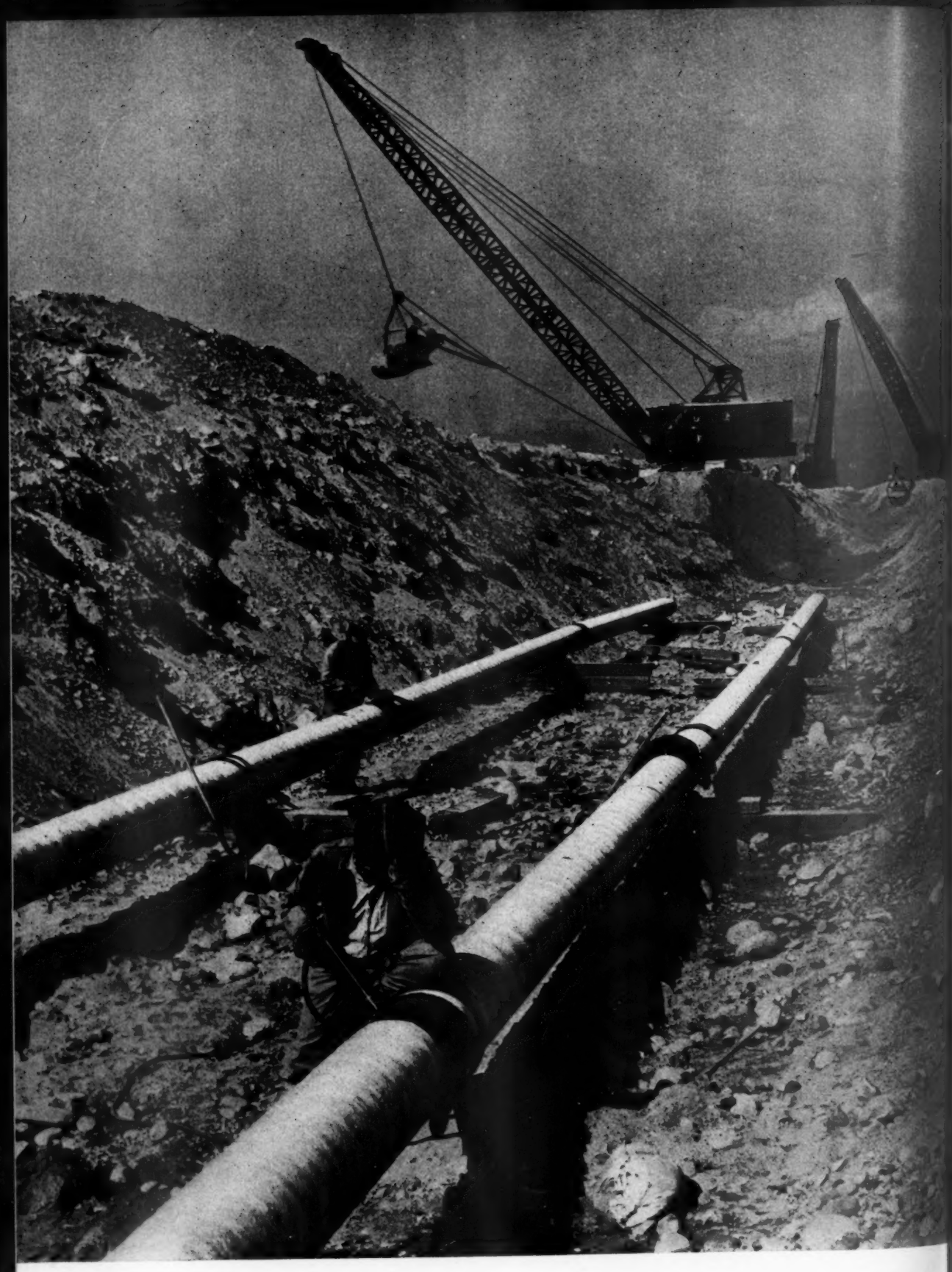

JAMES M. BEALL, *Editor*

Gas Industry Research

BY E. P. NOPPEL*

Chairman, Coordinating Committee on Research, American Gas Association

WE are in a period of rapid change and this may well continue for some time in the postwar period. Research throughout the nation has been greatly stimulated by the requirements of the war program. Production and quality of airplanes, tanks, ships, guns and other war materials are paramount. Costs and economics are secondary in time of war.

In fact, the present war has become the most terrible in history because of advancement in technological development. It has resolved itself to a large extent into a battle of science and production. New developments in weapons and various implements of destruction used in war have given temporary advantage to one side or the other.

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At the same time, these advanced developments in the field of destruction have created opportunities such as we have never before experienced. Eventually we will see a conversion of the results of these vast wartime research programs to their application in connection with the production of new materials and equipment for peacetime use. All businesses including our own will be materially affected by these developments in the future.

Competition will operate not only on its pre-war levels, but on new levels. Rivalry is no longer limited to similar products in the same field. In these days, one kind of material competes with one or more totally different kinds which can be applied to the same use.

Take as a simple illustration a company engaged in the light metals industry. Here the management must be aware of research, not only in light metals, but also in plastics. The reverse holds true for the management producing plastics.

Recently we have seen the collapse of Germany. Shortly, we hope, the collapse of Japan will follow and this will mark our full entry into the postwar world. It may be, and probably will be quite different from our pre-war world.

Looking forward to this postwar world, we are confronted, broadly speaking, with the necessity of doing two things:

First—We must keep our services—domestic, commercial and industrial uses of gas—constantly before the public. When a housewife thinks of a new range, we want her to think of a new gas range. When a factory reconverts from war production we want the heating operations to be on gas.

Second—Through research and development of new or improved methods, processes and appliances, we must keep our services in all fields well in line with competitive levels and the styling of our domestic and commercial appliances attractive so as to interest our customers.

We are fortunate in these days of rapid change that the leaders of our industry have taken steps to plan for the future. The American Gas Association has long been engaged in encouraging and stimulating research in the gas industry. Research activities during the year 1944 were the most extensive of any year in the Association's history.

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Early in 1944 the Coordinating Committee on Research was created by the Executive Board for the purpose of effecting a better coordination of the extensive research work of the Association.

Gas Industry Plan

Another progressive step was the formulation of the plan for research and promotional development in the gas industry. Under this plan, subscriptions exceeding $1,400,000 representing about 75% of member companies, or about 70% of the entire industry have been received.

This plan provides, as you know, a total of $600,000 for

*Ebasco Services Inc., New York, N. Y.
Presented before Gas Meters Association of Florida-Georgia, May 18.

● Opposite: Santa Clara River crossing, deep beneath the streambed near Saticoy, of the Southern California gas companies' transmission pipeline from La Goleta to Los Angeles. Photographed by Mel Jones of the Southern California Gas Company.

research and $800,000 for advertising and general sales promotion activities.

Institute of Gas Technology

During 1941, the Institute of Gas Technology, which is a research organization independent of the American Gas Association although working closely with it, was created to provide a center for graduate education and research for the gas industry. It is financed by contributions from its member companies among which are numbered many of the leading manufactured and natural gas companies. Its program of basic research is planned to study broad problems which are of general interest to the industry as a whole. Competent, full-time research staff members are in charge of the projects, and the results of such investigations will be made known to its member companies and ultimately, through publication, to the industry as a whole. Sponsored projects are also undertaken on a confidential basis for member companies, and the results of such projects are, of course, the property of the sponsor paying for the research.

Rough Grouping of Research Problems

The problems of the gas industry in the field of research may be grouped under the broad following headings:

Manufactured Gas Production
Natural Gas Production
Natural Gas Transmission
Gas Distribution (Manufactured and Natural Gas) Utilization
Domestic Gas Research
Industrial and Commercial Gas Research
Gas Air Conditioning
Research in Connection with Approval Requirements

In order to obtain the best results, it is necessary to assign the work to specific groups or institutions who are properly equipped to handle the work of the particular problem involved.

Scope of Research Covers a Broad Field

In considering the field of research, we should not limit it to the scope of the work done under the direct supervision of committees of the American Gas Association. It covers a much wider field. Fortunately we have two very good institutions which we look upon as being definitely a part of our industry where much can be accomplished:

The American Gas Association Testing Laboratories at Cleveland, Ohio, and Los Angeles, California
The Institute of Gas Technology in Chicago, Illinois

In addition, we are in a position to reap the benefits of the research work being done by other groups and institutions such as:

Research laboratories of the various manufacturers of gas appliances, pipe, production and other equipment
The Bureau of Mines
Research laboratories of other groups and institutions

Research is Exploratory

There is often a misunderstanding of research and what may be expected of it. It is not an article of commerce which can be purchased by the pound or the gallon. Anyone who seeks to understand how research works, what it is accomplishing today or what it will accomplish tomorrow, needs to remember that the secret of successful research is *men*.

Research is of necessity exploratory. In starting out on a project of fundamental research, there is no assurance that the work will lead directly to the results hoped for. Patience, time and money are required to bring even a well-conceived project to a successful conclusion.

The Standard Oil Development Company recently held a Silver Anniversary Forum on the Future of Industrial Research. It covered a broad field, and its program was made up of papers and discussions by outstanding leaders in the research field. The results of the Forum were published in book form, and I would like to turn for a moment to a few quotations.

The introduction was prepared by Frank A. Howard, president of the company, and started off with this paragraph:

"Industrial research is now accepted as the main reconnaissance staff of industry. It must keep years ahead of the forces of production, and these forces are headed not only toward a victorious ending of the war, but toward an unprecedented standard of living for the postwar world. Adequate plans must be made for the postwar research which is to lead industry toward its goals. Standard Oil Development Company therefore made its own Silver Anniversary, in October of 1944, the occasion for a Forum on the Future of Industrial Research."

Under the heading of *What Is Industrial Research*, I find this thought:

"New industries and the advancement of old industries depend, first of all, on increase in the sum of human knowledge—and that, of course, is the function of scientific research. But they depend even more on a new application of existing knowledge—and that is development. . . . . The third component of industrial research is the unpredictable one, invention. . . . . By invention, new concepts seem to appear suddenly on the earth. . . . . These three—scientific research, development and invention—are the components of technical progress in industry."

In discussing the subject of fundamental research, Lammot du Pont, referring to the time when he became engaged in the chemical industry, had this to say:

"It seemed to me that fundamental research was the ideal type of research, but in later years I was faced with the problem of what fundamental research is and, in my crude way, not being a scientist at all, I came to the conclusion that fundamental research is the examination into some question, the prospective results of which seemed to be entirely useless. Why should that be a desirable field for work? Why, I think the explanation is that the thing that appears to be useless very frequently turns out to be of great use, and in a way which is entirely unexpected.

"What is fundamental research today is applied research tomorrow. I believe in the end it will always turn out that way."

In discussing the question "How far ahead must you start on research before the salesman can carry the product on the road?" C. F. Kettering, vice-president and director of the General Motors Corporation and general manager of the General Motors Research Laboratory, made these comments:

"In our particular line we say we work from ten to fifteen years ahead of the product. We call that research. We divide up our research program in this way: About twenty-five per cent of our total man-hours goes into service to our divisions; another twenty-five or thirty per cent goes into sample making, that is, making working samples which are not products, but from which a product can be designed; and the other forty-five or fifty per cent is spent in long-range pure

science, or physical and chemical research, in which we begin to orient into useful information the factors which are not yet quite in a tangible form.

"As an example of this latter type of work, consider the research in combustion. Our first contact with Frank Howard, many, many years ago, occurred when we were working on the question of what caused the knock in an engine. We still don't know—but we do know a lot of things that don't cause knock. That work has been of a long range, and it really is concerned with fundamental thermodynamics."

He concluded his discussion with this statement:

"If I had to set up a forward-looking program for industrial research, I would say: 'Pick out the problem, pick out the best men you have, and let the job be the boss from then on.' "

Growth of Industrial Research

At this Forum, one of the speakers pointed out that it is only since the first World War, which drew attention to the developments that had given Germany such industrial strength, that industrial research has become a major feature of our economic life.

Mr. Derby (president—American Cyanamid & Chemical Corporation) then went on with the following statement in regard to the rapid growth of research among industrial companies since 1920:

"I am confident that research in industry has not reached the ultimate in its scope and importance. According to figures compiled by the National Research Council, in 1920 about 300 industrial companies in this country employed 9,300 persons in research. By 1930 these numbers had grown to 1,625 establishments with personnel of 34,200. By 1940 the figures were 2,350 establishments and personnel of over 70,000. In other words, in twenty years there was more than a sevenfold growth in the number of people employed by American industry in research. Expenditures by industrial firms for this purpose have been estimated to be about $300,000,000 a year. The future outlook, I believe, is for this trend to continue and for research to occupy a still larger place in the plans of industrial management and to exert still greater influence on our economic life."

I mention these statements so that you may have some idea of the thinking of outstanding men in other industries, and hope you will keep them in mind as we go into our discussion of the research program of the American Gas Association.

Our Research Program

The research program of the American Gas Association can be set forth under three main subject groups and I will cover them in that order:

Manufactured Gas Production Research
Utilization and General Technical Research
Approval Requirements Research

Manufactured Gas Production Research

Under the plan for research and promotional development in the gas industry, it is proposed to raise $350,000 annually for three years or a total of $1,050,000 for technical research in the field of manufactured gas production. This work is being done under the supervision of the Gas Production Research Committee of the Manufactured Gas Department whose chairman is P. T. Dashiell, vice-president of The Philadelphia Gas Works Company. He has made available to me information on this phase of the Association's program. This committee is assisted in its work by an Advisory Technical Committee of operating engineers and chemists under the chairmanship of F. J. Pfluke of the Rochester Gas & Electric Corporation, Rochester, New York.

Under the procedure set up by the Plan Committee, research projects in this field are studied by the Gas Production Research Committee, and requests are made for allotment of funds to the Plan Committee. Currently, the sum of $40,600 has been allotted to cover work in connection with the following four projects which have been assigned to the Institute of Gas Technology:

1. The Study of Existing Processes for Gasification of Propane and Butane

   The objective here is to obtain, without laboratory work, the maximum amount of information on the applicability to the gas industry for peak load purposes of all presently known processes.
2. Catalytic Gasification of Higher Hydrocarbons

   It is the objective of this project to obtain from laboratory scale apparatus, information necessary to design full-scale, low-cost plants for:

   (a) Production of 550 (525 to 575) B.t.u. water gas from propane and steam
   (b) Production of similar gas from higher, but vaporizable hydrocarbons including kerosene and gas oil, if possible
3. Study of Methods of Increasing Capacity of Existing Equipment at Low Cost
4. Study of Oxygen, Steam, Carbon Reactions under Normal Elevated Pressures

In addition, the committee, believing the subject of oxygen utilization and gas production, generally and specifically, with respect to the many complicated reactions encountered normally, as well as at elevated temperatures and pressures, has recommended additional and complementary research on this subject at Battelle Memorial Institute amounting to $22,400.

Three other projects approved at a recent meeting of the Manufactured Gas Production Research Committee, and submitted to the Plan Committee for allotment of funds, amounting to $41,200 are as follows:

1. Development of Sulphur Resistant Catalyst

   The development of sulphur resistant catalyst is expected to fill a long-felt need in gas production operations, it being generally known that one of the problems of utilization of the catalyst is the prevention of the so-called poisoning of the catalyst due to the presence of sulphur in the usual raw materials utilized in the gas industry for conversion to gas. Catalysts speed reaction, and in general, when so doing, they tend to work in the direction of a lower temperature for reactions.
2. Flash Gasification

   This may prove to be a potentially valuable procedure to the industry, having in mind both capital expenditure as well as operating costs. The large quantities of fines available at lower costs in the light of flash gasification and in some other complementary and very directly related studies might

Halos for Gas

● When I talk about halos for gas ranges, I am impressed with the fact that our whole effort in the next few years should be directed towards putting a halo not only around the gas range, but around our gas flame. Sometimes we have been rather fearful when our competition have reminded us that gas has an odor and that it has a flame. Perhaps the turning point in our new thinking came at the time when we recognized that we did have a flame and then set out to capitalize upon it. Lifebuoy soap cannot be made without the attending evil odor, but when that company recognized that fact, it advertised the smell as a symbol of health and vigor and now they cannot make enough soap to satisfy the demands. Yes, we need a halo for our gas flame and we have it here in a program that will add glamour to our industry.—*H. V. Potter, Director, New Freedom Kitchen Program.*

also prove to be of advantage in future production processes.

3. Flash Pulverization of Coal and Coke

This is a companion project, so to speak, to flash gasification and in addition to its interest in the direct gas production, may have application for steam boiler and producer operation.

Summing up, these various projects covered by allotments authorized or requested total $104,200.

At the request of the Postwar Planning Committee there is now under preparation a report covering a series of basic studies, surveys of literature and recent developments in the field of production. In general, it covers the following subjects:

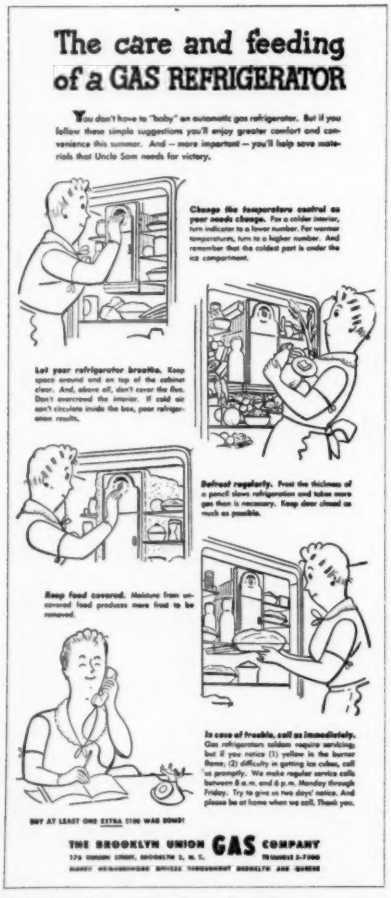
1. Reports on Utilization of Natural Gas Condensates—Project CS 11
Section I—Availability
Section II—Direct Gas Service by Means of Central Plant Distribution
Section III—Gas-Air Mixture for Supplementing Peak Load Requirements
Section IV—Substitution for Enriching Oils for Increased Capacity

2. Utilization of Off-Peak Capacity (Survey & Summary of Literature) Project CS 12

3. Present Status of Fischer-Tropsch Process and Hydrogenation of Coal (Survey & Summary of Literature) Project CS 13

4. Low Investment Cost Gas Production Process and Plant (Survey & Summary of Literature) Project CS 10

This work is being done at the Institute of Gas Technology under the supervision of a committee of the Technical Section. It is expected that this report will shortly be handed to the printer and later become available to member companies.


The care and feeding of a GAS REFRIGERATOR
You don't have to "baby" an automatic gas refrigerator. But if you follow these simple suggestions you'll enjoy greater comfort and convenience this summer. And – more important – you'll help save materials that Uncle Sam needs for victory.
Change the temperature control as your needs change. For a colder interior, turn indicator to a lower number. For warmer temperatures, turn to a higher number. And remember that the coldest part is under the ice compartment.
Let your refrigerator breathe. Keep space around and on top of the cabinet clear. And, above all, don't cover the flue. Don't overcrowd the interior. If cold air can't circulate inside the box, poor refrigeration results.
Defrost regularly. Frost the thickness of a pencil slows refrigeration and takes more gas than is necessary. Keep door closed as much as possible.
Keep food covered. Moisture from uncovered food produces more frost to be removed.
In case of trouble, call us immediately. Gas refrigerators seldom require servicing, but if you notice (1) yellow in the burner flame, (2) difficulty in getting ice cubes, call us promptly. We make regular service calls between 8 a.m. and 6 p.m. Monday through Friday. Try to give us two days' notice. And please be at home when we call. Thank you.
BUY AT LEAST ONE EXTRA $100 WAR BOND!
THE BROOKLYN UNION GAS COMPANY

The Brooklyn gas utility adopted conservation for the theme of this effective advertisement

Utilization and General Technical Research

Under the gas industry plan, it is expected that the following annual amounts for a period of three years will be allotted:

Domestic Utilization Research	$150,000
Industrial and Commercial Gas Utilization Research	50,000
General Technical Research	50,000

The total amounts asked to be allotted for research in these fields over the three-year period are estimated to be $750,000.

Research projects in these fields originate in the various research committees of the Association where they are given careful study, and under whose direction the working outlines are prepared. The recommendations for authority to conduct the research, including estimates of the funds required, are prepared by the various departments, sections and committees of the Association. They are submitted to the Coordinating Committee, who in turn, prepare the final recommendations and budget estimates for submission to the Plan Committee for allotment of funds.

The individual projects are assigned to the various laboratories and institutions best fitted to carry out the particular project, and the work is under the supervision of the respective research committees of the Association.

In accordance with requests made by these committees through the Coordinating Committee on Research, the Plan Committee has allotted to date the sum of $145,500 for research in connection with this part of the program during the present Association fiscal year ending September 30, 1945.

Domestic Gas Utilization Research

Domestic gas utilization research is carried on under the supervision of the Committee on Domestic Gas Research and its subcommittees. The program includes a number of projects, and it may help to clarify the presentation by discussing them under these major headings:

Research in Domestic Gas Cooking
Research in Domestic Gas Water Heating
Research on Gas Burners
Research in Central Space Heating
Research in Direct Space Heating

Projects in the first four groups listed above have been continuing for some time, while the first project in the last group is just getting under way.

Subcommittees composed of utility and appliance manufacture engineers develop detailed working outlines; check and analyze data as the work progresses; review and approve all technical material before it is published and released. Both the broader aspects of each of these research projects and the working outlines for the individual projects included under each heading are reviewed from time to time and altered if necessary.

Domestic Gas Cooking Research

Currently, there are nine projects included in the field of domestic gas cooking research, all of which are following carefully prepared working outlines. They are as follows:

Research in Methods of Kitchen Ventilation
Research in the Use of Radiant Materials in Gas Range Broilers
Research in the Fundamentals of Design Features Affecting Broiler Performance
Research in Construction of Gas Range Top Sections for Easier Cleaning and Smoother Styling
Research in Applicaton of Special Type Burners for Gas Range Top Sections
Research in Distribution of Heat in Gas Range Ovens
Research in Fundamentals of Design Features Affecting Oven Performance
Research in Study of Materials Applicable for Use in Sealing Gas Range Oven Doors
Research in Methods of Providing Pressure Relief in Gas Range Ovens

Research in Domestic Gas Water Heating

Under research in domestic gas water heating the following projects are included:

Research in Longevity and Applicability of Thermal Elements Used in Automatic Gas Pilots for Gas Water Heaters

Research in Special Types of Burners for Flames Adaptable to Gas Water Heaters

This group of projects will be enlarged.

Research in Gas Burners

Research in gas burners covers four projects as follows:

Research in Development of 100% Primary Air Atmospheric Injection Gas Burners

Research in the Effect of Ambient Temperatures and Pressures on Primary Air Injection, Flame, and Other Gas Burner Operating Characteristics

Research in Methods of Preventing Closure of Gas Pilot Burner Primary Air Openings by Dust and Lint

Investigation of Extent of Gas Flame Impingement Allowable for Satisfactory Combustion

Research in Central Space Heating

Central space heating research at present covers two projects:

Research in Fundamentals of Heat Transfer in Central Gas Heating Furnaces

Research in the Fundamentals of Design Features Affecting Performance of Central Heating Equipment

Direct Gas Space Heating

Research in Direct Gas Space Heating at present includes one project:

Research in Venting Where No Chimney Connections Are Available

The project will include a complete study and analysis of the venting problem, particularly as applied to direct space heaters, and will aim to present reliable technical data on the disposal of the products of combustion where standard chimney connections were not available.

Next A. G. A. Kitchen Ad Display

Bishop Publishing Company, 427 W. Randolph Street, Chicago 6, Illinois, is tying in with all American Gas Association national magazine full color ads, and reproducing the kitchens in giant size in same full colors on gas displays for use at about the same time they appear in the magazines, giving double value—a good way to keep the "foot in the door"

Domestic Gas Utilization Research—Prospective New Projects

In addition to the above projects for which funds have been allotted, there are others under consideration. The Domestic Gas Research Committee is continually carrying on preliminary investigations and analyses of projects that might be undertaken to the advantage and profit of the industry. "Many are called, but few are chosen." At the present time, four such preliminary investigations are under way:

Research in Pilot Design, Construction and Performance

Research in Gas-Operated Summer-Winter Hookups

Research in Home Humidity Control

Investigation of Possibilities of Developing an All-Purpose Gas Cooking Machine

The new project in "Pilot Design, Construction and Performance" has been approved by the Committee on Domestic Gas Research and the general working outline is completed. There has been no fundamental and thorough research work on the design, construction and performance of this vitally important adjunct of all modern gas appliances, although extensive work has been done on certain particular phases of pilots, such as gum filters, flash tubes, safety cut-offs, etc. That type of work will not be duplicated in this new project.

The new project on "Gas-Operated Summer-Winter Hookups" will produce reliable and complete data, against which local utilities conducting field experiments can check and compare anticipated and actual results. This data will also be made available to engineers and designers of gas boiler companies in connection with the incorporation of water heating coils for providing hot water supply the year 'round.

The new method of heating water by means of the "Gas-Operated, Summer-Winter Hookup" with house heating boilers is regarded by many as a promising means of successfully meeting the expected intense competition of oil-operated summer-winter hookups, where steam or hot water heating is used, especially in new homes, in the postwar period. This project has been approved and the general working outline has been completed.

The new project on "Home Humidity Control" has been brought to the

front chiefly by the nature of recent developments in residential architecture and construction. Generally speaking, smaller homes are being built; they are more heavily insulated and windows are tighter. The kitchen is no longer isolated from the rest of the house. This has brought about rather critical humidity conditions, especially in small, prefabricated houses which may comprise a substantial part of postwar housing construction.

The sources of humidity in a home are many and varied. In the older, larger houses, especially with older types of building materials and construction, condensation on walls and windows was not a serious problem. The question is, what are the sources of humidity in the newer types of houses, what portion is from the use of gas and what steps can be devised to overcome condensation on walls and windows when gas is used. The balance between condensation or no condensation is critical in many climates, and there is a belief among certain building interests that condensation or no condensation is dependent upon whether gas or electricity is used in the house.

While this problem is tied up with kitchen ventilation, on which the Domestic Gas Research Committee is now conducting research, it is, in fact, much broader, as in new types of houses particularly, it affects all walls and windows. Others are working on this problem and it is proposed that an engineering study be conducted by an outstanding organization, by reviewing material available from all sources and summarizing all work that has been done. Based on the findings, the gas industry's technical position in this matter can be determined and stated.

The proposed "Investigation of Possibilities of Developing an All-Purpose Gas Cooking Machine" is in its early stages of analysis by the committee. The Institute of Gas Technology, which has done some work on the subject, as well as others, are being consulted before any definite steps are taken.

All of these prospective new domestic research projects are in the course of investigation and, therefore, are not listed in the active program.

Accomplishments in 1944

While we are on the subject of domestic gas research, it might be of interest to mention some of the developments reported by the Association Laboratories during the past year. Most of the Domestic Projects have been assigned to the Association Laboratories which will aid in the design of appliances in the future. These are covered by laboratory research bulletins, and in the interest of brevity, I am giving the titles only.

Research Bulletin 21—Single Point Flash Tube Ignition of Oven and Broiler Burners

Research Bulletin 28—Electric Ignition of Gases

Research Bulletin 33—Design Features Affecting Gas Range Surface Temperatures

Research Bulletin 29—Principles of Design and Sizing of Automatic Gas Water Heaters for Maximum Service Efficiency

Research Bulletin 22—Primary Air Control Devices for Atmospheric Gas Burners

Research Bulletin 26—Primary Air Injection Characteristics of Atmospheric Gas Burners

Research Bulletin 27—A Study of Performance Characteristics of Vented Domestic Gas Ranges

Research Bulletin 23—Performance Characteristics of Gas Range Top Sections Equipped with Atmospheric Burners

Research Bulletin 25—A Study of Fundamentals of Resonant Noise in Gas Furnaces

Research Bulletin 32—Non-Aerated Burners

Research Bulletin 20—Gas Burners Utilizing All Air for Combustion as Primary Air

Research Bulletin 34—Temperature as a Factor in the Design of Aerated Gas Burners

These bulletins are available.

Industrial and Commercial Gas Utilization Research

We now come to Industrial and Commercial Gas Utilization research. This research covers five projects:

1. Research in Controlled Vacuum Heat Treating

This work is being conducted by the Surface Combustion Corporation and was financed from 1944 funds and was not included in the request for allotment during the current year. In general, the objective is to investigate the possibilities of heat-treating metals as an alternative to heating in combustion atmospheres or in prepared synthetic atmospheres.

2. The Application of Forced Combustion to Commercial Cooking and Baking Equipment

This project has been assigned to Selas Corporation of America and has as its objective the investigation of the practicability of heating all types of commercial cooking and baking appliances with power burners and/or pre-mixed burners to supplement the now universally used atmospheric burners.

Under this project the heating requirements of the following types of heavy duty equipment will be studied in the light of present day and postwar conditions:

Deep fat fryers, ranges, broilers, baking ovens and roasting ovens.

3. Investigation of Plug-in Flexible Connections for Gas Appliances

This project has been assigned to the American Gas Association Laboratories. The objective is to determine the practicability of the several types of flexible plug-in types of connections now being offered by manufacturers, and to prepare technical information that will enable manufacturers to design such devices so that they can be used under practical operating conditions in different localities.

4. Development of Batch-Type Counter Toaster

This was assigned to the Savory Equipment Company, Inc. but is temporarily inactive.

5. Improvement in Non-Ferrous Metal Melting Through the Application of Direct Radiant Gas Heating

This is a joint project of the Selas Corporation and the A. G. A. Laboratories, and is temporarily inactive.

Industrial and Commercial Gas Utilization Research—Prospective New Projects

Subject to further investigation of facilities; the working out of approaches to the projects; development of detailed working outlines; the committee has approved prospective new projects in:

(1) Advanced Studies in High-Speed, Direct Heat Treating, and

(2) Studies of Various Heat Rays for

Good Idea

● Gas men will appreciate the following newspaper ad which appeared in June:

ELECTRIC FIRES SMOTHERED WITH GAS! Sub-station fires are tough . . . until Blank Extinguishing System goes into action. Then the blaze is snuffed out in seconds by dry, non-conducting carbon dioxide gas—harmless to equipment.

Transmitting Heat and Penetrating Materials at Both High and Low Temperatures

Gas Summer Air Conditioning Research

One minor project on Gas Summer Air Conditioning Research covered a survey of water problems encountered with summer air conditioning equipment which was undertaken in 1944, the results of which have been reported in a recent laboratory bulletin.

In the field of air conditioning, there has been found to be a need for the establishment of reliable data on friction losses through air distribution ducts in fittings commonly used in domestic and small commercial air conditioning systems.

This need has been recognized by other industries in the air conditioning and heating business. The American Society of Heating and Ventilating Engineers proposes to sponsor and carry on a cooperative project to develop this new information, the cost of which will be distributed among the participating industries. The American Gas Association is helping the Society organize the project, and will participate in it and have representation on the supervising committee which will represent the various interested industries.

General Technical Research

The following projects have been included under General Technical Research:

Investigation of Controlling and Gauging Combination Wells
Investigation of Natural Gas Hydrates
Completion of Mixed Gas Research and Development of Standard Test Burners
Organic Sulphur Research
Iron Corrosion Fellowship

The work in connection with "Investigation of Controlling and Gauging Combination Wells" is being conducted by the U. S. Bureau of Mines and consists of both laboratory and field investigations regarding deliveries from gas wells producing gas, condensate and oil and also obtaining as much fundamental information as possible regarding the physical characteristics of the products produced from combination wells, in order to plan most efficient operation of wells and to control and gauge deliveries from them.

The "Investigation of Natural Gas Hydrates" is being conducted at the U. S. Bureau of Mines and covers both laboratory and field investigations of the phenomenon of hydrocarbon hydrate formations so as to present information for remedial measures for use by natural gas companies encountering hydrate stoppage in high pressure natural gas transmission lines.

Work in connection with "Mixed Gas Research and Development of Standard Test Burners" is being conducted at the A. G. A. Testing Laboratories. This project was largely completed in 1944 and the work, this year, covers chiefly the preparation and circulation to the industry of the final report.

In general, the mixed gas project consists of the determination of how limiting mixtures of available gases which, when mixed to a heating value ranging from 800 B.t.u. to 1800 B.t.u., will perform satisfactorily on domestic appliances adjusted for various natural gases, and to develop a simple test burner for plant control purposes. Also to develop a modification of the so-called "Mixed Gas Formula."

"Organic Sulphur Research" is a continuing project and is being conducted at the Institute of Gas Technology. Objectives are to aid in the development of methods for the economic complete, or essentially so, removal of organic sulphur compounds from gas, particularly manufactured gas. As a preliminary step, it is necessary to develop analytical methods for identification and separation of these sulphur compounds, to be followed by methods for their accurate quantitative determination.

The "Iron Corrosion Fellowship" covers work being done at Rutgers University in connection with the study of that type of anaerobic corrosion which is caused by certain anaerobic bacteria having ability to reduce sulphates in the soil. This will also include the development of apparatus and techniques whereby active microbiological anaerobic corrosive locations may be readily located in the field.

YOU CAN DO IT BETTER WITH GAS

("Rednib" in *Gas Times,* London)

When cooking chips or frying Spam,
Or heating up our platters,
We all agree it's plain to see
It is the flame that matters.

I've heard this phase from many ranks;
It makes Huns mad as hatters,
When thrown at them from Churchill Tanks,
It is the flame that matters.

The people in Berlin have heard,
Through air-raid's bangs and clatter,
This theme song of the R.A.F.,
It is the flame that matters.

With Hitler dead and gone to ——
His Reich in rags and tatters,
This slogan trite he'll know quite well,
It is the flame that matters.

Approval Requirements Research

Continual investigations and studies are required in connection with the preparation and periodic revision of approval requirements standards of the American Gas Association Testing Laboratories. This work is conducted under the general supervision of the Approval Requirements Committee and its various subcommittees, and it is financed from the general funds of the American Gas Association.

Approval Requirements Investigations are made up of a large number of small projects which may be generally grouped under the following headings:

Domestic Gas Ranges, Hot Plates and Laundry Stoves
Gas Space Heaters
Gas Water Heaters
Central Heating Gas Appliances
Hotel and Restaurant Ranges
Deep Fat Fryers and Unit Broilers
Gas Unit Heaters

In the current Association budget, approximately $50,000 has been allotted for this work.

I will not attempt to list all of the individual projects included in the Approval Requirements program, but for the purpose of illustration, I will mention several which have been included under domestic gas ranges, hot plates and laundry stoves: *(Continued on page 366)*

Tenth Year of National Advertising

"Roughs" of A. G. A. domestic gas advertising campaign which will run in full color (refrigeration included) with the New Freedom Gas Kitchen series in national media having a total circulation of more than 45,000,000

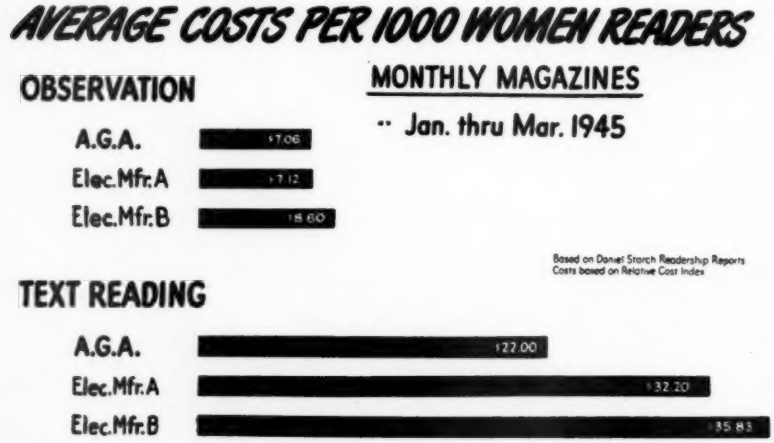
Greatly expanded progam for 1945-46 includes two separate full color domestic campaigns and wider industrial audience

TWO distinctive and concurrent consumer advertising campaigns with a total of 270,000,000 impressions—twice as many as in the 1944-45 campaign—were approved by the Association's Committee on National Advertising to start the tenth year of cooperative national advertising in October. The committee also approved an enlarged program of industrial and commercial gas advertising. Except for 1933 this latter program has been conducted continuously since 1925.

The slogan "GAS—The Wonder Flame That Cools as Well as Heats" will be retained in the domestic gas campaign while the industrial and commercial advertising will continue to feature its widely accepted slogan, "The Trend Is to Gas."

An extension of the New Freedom Gas Kitchen theme will embrace one series of consumer advertisements; the second series will focus attention on the many advantages of residential gas service and gas appliances; each will run in its selected list of media.

While the series devoted to the New Freedom Gas Kitchen naturally follows the present format which has been well received by women so far, the layouts and copy will reflect improvements dis-



Observation and readership report on early 1945 New Freedom Gas Kitchen ads prove that the kitchen series is either equalling or exceeding in interest similar promotions by competitors

covered by experience and study of readership reports. The six kitchens show considerable variety in design and color combinations, and all met with the general approval of the committee at its meeting May 23 on the score of good balance between an efficient workroom and an attractive place in which to work.

A special system for the pre-testing of color combinations in room design which has been used successfully by McCann-Erickson, Inc., the agency, will be used for pre-testing the kitchen designs in full color.

Continuation of the kitchen theme into the tenth year of national advertising was considered important by reason of two research reports made by the agency.

1. Observation and readership reports on the first three 1944-45 New Freedom Gas Kitchen advertisements in weekly magazines, and the first two in monthly magazines gave factual evidence that early in the campaign the ads were either equalling or exceeding in interest similar campaigns by competition, and despite competition's greater usage of advertising pressure in terms of expenditures.

Also, data proved the current campaign was creating much more interest than either the "House of the Future" or "Blue House" campaigns which ran in 1944.

2. The second report was an analysis of a psychological survey made by the agency of the opinions of 125 women of the middle economic class in four localities.

The first evidence gathered in the test, based on the first three ads of the current series, indicated that improvements in the home were interesting and vital to women as follows:

Kitchen	63 per cent
Living room	29 per cent
Bathroom	6 per cent
Bedroom	2 per cent

Briefly, the agency's conclusions were

A versatile continuous annealing GAS furna
with Great Post War Possibilities
Photo courtesy W. S. Rockwell Company, New Yo
This furnace, which anneals brass slabs at a rate of 10,000 to 15,000 lb. per hour, has many features which give promise of improved products and faster production for post war manufacture, both in ferrous and non-ferrous fields.
Work is carried through the furnace on closely spaced, highly polished rollers, extending the entire width of the furnace and through the walls. A special sealing box around the neck of the rollers prevents leakage.
Firing is done by burners located on both sides of the furnace, using premixed Gas and air. Combustion and atmosphere conditions are controlled by simple adjustment at a single point. Temperature control is fully automatic with temperatures ranging from 750° F to 1800° F.
Other advantages are that no time is lost in heating up, travel is minutely controlled, uniform heating results and distortion is eliminated or minimized. The furnace is adaptable to brazing, normalizing, hardening and other operations.
Advances in Gas heat treating equipment go on constantly, and it would be well to check with your local Gas Company's Industrial Gas Engineer from time to time, to see that you have the latest information on developments that may help you.
AMERICAN GAS ASSOCIATION
INDUSTRIAL AND COMMERCIAL GAS SECTION
420 LEXINGTON AVE., NEW YORK 17, N.Y.
Buy War Bonds — Help Speed Victory!
THE TREND IS TO GAS

Industrial gas national advertisement of the 1945 series. The new industrial and commercial campaign will appear in 62 publications with a total circulation of about 600,000

IN addition to increased A. G. A. national advertising funds appropriated by utilities, the gas industry's allied manufacturers of appliances and equipment are this year, for the first time since national gas advertising started, contributing to the program through their organization, the Association of Gas Appliance & Equipment Manufacturers.

Lyle C. Harvey, president, A. G. A. E. M., told the Committee on National Advertising, May 23 that his association would contribute more than $150,000 to the program for 1945-46.

The consensus among A. G. A. E. M. members, he said, was that the gas industry has two selling jobs on its hands namely, selling of gas as a fuel, and the selling of appliances. The selling of gas as a fuel is the responsibility of the A. G. A., and the utilities, he stated, whereas the selling of gas appliances is the responsibility of the manufacturers.

In line with this latter thought, he reported that the A. G. A. E. M. is engaged in developing a comprehensive promotional program which it plans to put in operation next year. This program will tie in closely with A. G. A. national advertising and promotional activities, he declared.

H. Carl Wolf, Chairman of the Committee on National Advertising, thanked Mr. Harvey and the A. G. A. E. M. for their support. He announced that contributions to the national advertising fund had also been made by manufacturer members of the A. G. A.

Two representatives of A. G. A. E. M. have been elected to the Committee on National Advertising. They are Mr. Harvey and S. E. Little, chairman of the A. G. A. E. M. Advertising Committee and vice-president of American Stove Co., Cleveland.

Four representatives of A. G. A. E. M. have been appointed to the Domestic Gas Copy Committee. They are R. J. Canniff, Servel, Inc., Evansville, Ind.; Jim Donnelly, A. O. Smith Corp., Milwaukee; L. C. Ginn, American Stove Co., Cleveland; and a Pacific Coast man to be chosen.

Lyle C. Harvey

S. E. Little

R. J. Canniff

Jim Donnelly

L. C. Ginn

that the subject of kitchens is 100 per cent adapted to attracting women; that the ads were improving in their attention-getting elements; that the effect on women's minds was to create sharp interest in gas appliances and gas service.

From this data, from discussions with editors of women's magazines, from study of independent surveys which reveal the trend of thought of homemakers, the committee concluded that a wise choice had been made in building the 1944-45 campaign around the subject of the New Freedom Gas Kitchen.

The "Margaret Mallaby" half pages in black and white, originally planned as editorial news-letters to women, will be discontinued because of insufficient news of gas appliances at this time.

Since it has seemed increasingly important for the Association advertising to offer a consumer booklet on New Freedom Gas Kitchens, an editorial staff outside the industry was selected, and a steering committee appointed to confer with that staff in the preparation of the booklet.

Since research on kitchen ventilation at the Testing Laboratories of the American Gas Association has not reached a point where the findings embracing all systems can be published in detail, the subject of ventilation will be covered adequately in the booklet without specific reference to methods and without sketches or diagrams; it will be referred to in the text of the booklet wherever possible in terms of its many benefits and as "an integral part of the New Freedom Gas Kitchen."

Second Series of Ads

The second and complementary campaign of domestic gas advertising will consist of full page, four-color advertisements—four ads built around the statement "Where the Food Is the Finest, It's Cooked With Gas"; and one ad each on water heating, house heating, year 'round air conditioning and refrigeration.

This series will appear in The American Weekly and This Week—two newspaper magazines which are powerful advertising media, with a combined circulation of nearly 15 million. Slightly more than 100,000,000 advertising impressions will be provided by this appliance campaign, or approximately 40 per cent of the advertising impressions purchased by the two campaigns for the tenth year—with a total of 270,000,000. This is double that secured by the current campaign.

In addition to the American Weekly and This Week, consumer magazines which will carry the 1945-46 campaign are: Saturday Evening Post, Life, American Home, Better Homes and Gardens, Ladies' Home Journal, Good Housekeeping, True Story, Parents Magazine, House Beautiful, House and Garden, Woman's Home Companion, and McCall's.

A series of six double-page ads will also appear in American Builder, Architectural Forum, Architectural Record, Practical Builder; four pages in the Home Owner's Catalog, and five double-page ads in What's New in Home Economics. Sample copy and layouts for these were approved in general, subject to detailed analysis later.

Plans for industrial and commercial advertising as presented by Ketchum, MacLeod and Grove, Inc., the agency, were approved with an increase over the present budget. This will strengthen the advertising through better coverage of certain fields, also coverage in additional important fields, and more impressive space in some publications to tell this phase of the gas story.

Under the proposed program, the number of fields reached will be increased from twelve to sixteen; the number of publications increased from 19 to 24, with 37 engineering college publications added; the number of pages of advertising will be increased from 225 to 299 in trade publications and 236 pages will be taken in college publications—making a total of 535 pages of advertising.

The complete list of publications to carry industrial and commercial gas national advertising includes: The Iron Age, Steel, Metals & Alloys, Metal Progress, Foundry, Ceramic Industry, Glass Industry, Food Industries, Chemical & Metallurgical Engineering, Chemical & Engineering News, Bakers Weekly, Bakers Helper, American Restaurant, Restaurant Management, Hotel Management, Modern Hospital, Institutions, Nation's Schools, Industrial Heating, Modern Industry, Factory, Business Week, Chain Store Age, Editor and Publisher, Textile World and 37 Engineering College publications.

Barrymore on Cooks

● The late great actor, John Barrymore, showed an alert interest in one item of his yacht's cruising equipment, the galley stove. The yacht's specifications called for a five-burner, single-oven brick-lined range, fueled by diesel oil. Barrymore's cook said that he "could do better work with an eight-burner, two-oven range."

"Give our chef his eight burners," Jack said. "Give him eighty burners if he insists. The most important man on a ship, next to the skipper, is the cook.

"These geniuses of the cuisine are a little nutty to begin with," he added. "Only in France are they properly appreciated for their virtuosity. In that land of gastronomic intelligence, their slightly insane actions are entirely ignored. It is taken for granted that their constant stooping and crouching over hot kettles, pots, and the various flames and soup-retorts addles their wits. They became crazier than ever, these master cooks; but there is a sublimity in their madness. From it they create such wonders as make the belly sing hymns, and the liver dance as if before the Ark of the Covenant. The man who thinks that food is merely something to eat is the kind of moron who would make pen-wipers of the Sistine tapestries, or hang a First Folio in an outhouse. For God's sake, give our ship's cook an eight-burner range for his sanctum!"

Gene Fowler in "Good Night Sweet Prince" published by The Viking Press

TEN COMMANDMENTS FOR SALES MANAGERS

by HARRY SIMMONS

Calvert Distillers Corp., New York

I. Select men carefully
II. Train men thoroughly
III. Pay men liberally
IV. Reward men frequently
V. Recognize men constantly
VI. Promote men regularly
VII. Build men's pride
VIII. Increase men's power
IX. Develop men's morale
X. Deserve men's loyalty

—*Printers Ink*

Postwar Construction Expenditures

Estimates of gas plant expansion and methods of financing planned by utilities for the 12-month period after V-E Day

BY DANIEL PARSON

Assistant Statistician, American Gas Association

IN the first twelve months following V-E Day the gas utility industry plans to spend $171,416,000 on gross additions to utility plant, of which $119,848,000 is accounted for by the natural gas branch of the industry, and $51,568,000 by the manufactured gas branch.

These facts and other related information have been obtained as the result of a questionnaire sent to gas and electric utilities by the Federal Power Commission, acting in behalf of the Department of Commerce. This was part of a larger survey by the Department of Commerce, designed to determine the probable amounts of capital expenditures by all types of industries for this transitional period following the end of the war in Europe, and to determine the methods of financing which are planned for such expenditures.

Results of the complete study, released by the Department in the June issue of its *Survey of Current Business*, show that industry as a whole plans on spending $4,500,000,000 in the fiscal year starting July 1. This is said to be about three times the average construction expenditure in recent prewar years.

Questionnaires were sent to all Class A and B gas companies and to some Class C companies wherever it was necessary in order to obtain a minimum coverage of 85 per cent of the gas customers in each state. In accordance with requests from the American Gas Association, the Federal Power Commission tabulated the data separately for the manufactured and the natural gas branches of the industry, in order to facilitate comparison with similar, but not strictly comparable, Association data. The information was tabulated by Census divisions, and where a company had operations in more than one division, it was placed entirely in the division containing the bulk of its operations.

National summaries of gas industry information as reported by the Federal Power Commission are presented in Table 1.

It will be noted that only $18,869,000 of the $251,000,000 required will be raised through borrowing and the issuance of bonds and stock. This is a percentage of 7.5 for the industry as a whole; the natural gas percentage is 10.3 and the manufactured is 2.6. Nearly 50 per cent of the funds required for these planned capital outlays will be obtained from cash from current operations, another 30 per cent will be obtained from cash on hand at the beginning of the period, and 13 per cent will be accounted for by the liquidation of government securities.

This information on planned capital outlays can be compared with somewhat similar material which has been developed by the American Gas Association from annual report forms submitted by nearly 100 per cent of the gas utility industry. These data are shown in Table II.

It would seem from these tables that natural gas companies plan to spend far more per dollar of revenue than do manufactured gas companies. However,

TABLE 1—UTILITY EXPENDITURE SURVEY GAS UTILITIES

Planned Outlays of Natural and Manufactured Gas Utilities in the Twelve Months' Period Following the End of the European War

Item	*Total Gas*	*Natural Gas*	*Manufactured Gas*
1. Revenues From Sales to Ultimate Consumers	$1,080,552,000	$619,398,000	$461,154,000
2. Planned Outlays			
a. Gross additions to structures and improvements	$ 45,807,000	$ 33,286,000	$ 12,521,000
b. Gross additions to equipment	125,609,000	86,562,000	39,047,000
Combined a and b	171,416,000	119,848,000	51,568,000
c. Maintenance	69,674,000	36,623,000	33,051,000
d. Increased inventories of materials and supplies	10,023,000	4,427,000	5,596,000
Total	$ 251,113,000	$160,898,000	$ 90,215,000
3. Source of Funds Required For Above Planned Outlays			
a. Bank loans	$ 1,014,000	$ 470,000	$ 544,000
b. Issuance of securities			
1. Long term debt	8,222,000	6,555,000	1,667,000
2. Common capital stock	4,097,000	4,097,000	—
3. Preferred capital stock	5,536,000	5,375,000	161,000
c. Liquidation of government securities	34,453,000	24,464,000	9,989,000
d. Cash on hand at beginning of period	73,361,000	40,456,000	32,905,000
e. Cash from current operations	124,430,000	79,481,000	44,949,000
Total	$ 251,113,000	$160,898,000	$ 90,215,000

TABLE 2—A. G. A. ESTIMATES* OF CONSTRUCTION EXPENDITURES AND MAINTENANCE EXPENSES

	Total Gas	*Natural Gas*	*Manufactured Gas*
Revenue from sales to ultimate consumers (1944)	$1,110,666,000	$677,952,000	$432,714,000
Construction Expenditures (1945)	139,030,000	101,550,000	37,480,000
Maintenance Expense (1944)	62,860,000	32,930,000	29,930,000

*Preliminary

TABLE 3—COMPARISON OF F.P.C. AND A. G. A. ESTIMATES OF CONSTRUCTION EXPENDITURES AND MAINTENANCE EXPENSES, BY CENSUS DIVISIONS

Census Division	Revenues from sales to ultimate consumers		Construction Expenditures			Maintenance Expense	
	F.P.C. Estimate 12 months ending May, 1946 (000)	Actual 1944 (A.G.A.) (000)	F.P.C. Estimate 12 months ending May, 1946 (000)	A.G.A. Estimate 1945 (000)	Actual 1944 (A.G.A.) (000)	F.P.C. Estimate 12 months ending May, 1946 (000)	Actual 1944 (A.G.A.) (000)
New England	$62,596	$64,211	$5,044	$3,480	$2,180	$4,465	$4,360
Middle Atlantic	270,882	276,483	32,544	27,470	14,190	20,716	20,780
E. North Central	240,950	258,079	30,261	25,330	18,230	12,839	13,170
W. North Central	99,957	100,522	12,259	6,600	9,430	5,502	3,220
South Atlantic	76,505	81,442	19,355	18,480	8,370	7,126	5,790
E. South Central	35,704	39,790	7,223	5,630	4,830	1,577	1,390
W. South Central	132,574	134,867	46,185	28,710	20,540	8,243	6,140
Mountain	34,095	32,862	5,036	3,160	3,810	2,083	1,430
Pacific	127,289	122,410	13,509	20,170	16,590	7,123	6,580
Total	$1,080,552	$1,110,666	$171,416	$139,030	$98,170	$69,674	$62,860

such comparisons are not valid since the proposed capital expenditures of pipe line companies are included and their revenues from sales to utilities are excluded. Inclusion of revenues from sales for resale would tend to equalize the ratios for the two industry branches.

Comparison of the F.P.C. data with those of the American Gas Association, by Census divisions, for the entire industry (Table III) reveals several interesting facts. First, construction expenditures in the twelve-month period ending in May, 1946 will be substantially larger than in 1945 in every Census division except the Pacific Coast. This may be accounted for by an unusually high wartime rate of construction in that area due to great wartime industrial expansion. Second, estimated 1945 construction expenditures are higher than actual 1944 expenditures in all regions except two. Third, there will be no substantial increase in maintenance expenses.

A more conservative statement is that of the Office of War Utilities of the War Production Board, which estimates construction expenditures of only $80,000,000 in 1945 and of $105,000,000 in 1946. This is far lower than either the F.P.C. estimate of $171,400,000 for the twelve months following V-E Day, or the A. G. A. estimate of $139,000,000 in 1945. These two latter estimates take into account, primarily, the desires of the gas utilities and the expenditures which they want to make. The Office of War Utilities estimates, on the other hand, have been tempered somewhat to conform to the current outlook on the availability of materials, equipment, and manpower which would be required. Of course, with the war progressing favorably in the Pacific, there is a possibility that the shortages of materials and manpower may be eased and that expenditures will approach the higher estimates.

Mrs. Semplon's Fifth Freedom

● The war was over and Mrs. Semplon was almost bursting with satisfaction and pride. She was the very first person in all Scarsdale to have a brand-new, all-in-one unit kitchen. It had everything. Cost had been no object. She had saved up so much money she could not spend on things that were not for sale that she could afford the best, and the best was what she had.

Mrs. Semplon's life seemed complete and she had achieved the fifth freedom. She had, of course, been guaranteed freedom of speech—which, if the truth must be told, she had never felt without—and freedom of religion, and she was chronically free from fear and want. But now at last she was free, completely free, from drudgery.

To reassure herself, she ran her fingers over the console of the gleaming new kitchen stove, pressing a key here, kicking a diapason there. She glanced at the array of clocks and dials, as intricate as the instrument panel of a Douglas transport. She smiled at each transparent plastic pot and pan, garishly cooking its contents in full view of the world. She looked into the oven, brightly lighted to its farthest corner, and as she looked, the indicators of the dial on the pellucid oven door gave a slight lurch, showing that the time had come to increase the temperature inside.

The dinner things were arrayed on a large tray, which could be wheeled into the dining alcove and there become the dining-room table. Afterward, the dishes would wash themselves, in a sink filled with detergent and hot water, and, at the push of a button, would rinse and drain themselves.

With all the cupboards and electrical refrigeration and automatic everything, there would have been nothing whatever to complicate Mrs. Semplon's life if it had not been for the flower vases and highball glasses. These were of odd shapes and sizes and did not become soiled on any particular schedule, like dishes. They had to be cleaned at off times—at least, Mrs. Semplon thought they did. She was not the sort of woman to let dirty objects accumulate until it was time to wash dishes, and besides, she had found that her new dishwasher did not function well on only a few things. To wash the glasses and vases between meals was not a great chore, and for the purpose Mrs. Semplon had always used a funny little brushy swab on a long handle, with a tiny loop on the end to hang it up by. But the new kitchen had no place designed for her little brushy swab, and when she started to drive a nail into the window frame above the sink, where she had always hung it and could reach for it without even thinking about it, she suddenly realized that everything in sight was made of metal or brittle plastic and that she could no more drive a nail into it than into a pane of glass.

For days this perplexed and tormented Mrs. Semplon. She tried several resourceful schemes involving bobby pins, adhesive tape, and chewing gum, but none of them proved serviceable. She glared at her immaculate kitchen unit with a new feeling: the thing was uncooperative. It was smug. It had dogmatized everything anyone could do in a kitchen and there was no place for free thinking and individuality.

Mrs. Semplon spent more and more time in the kitchen, but lost her interest in food. She lost weight, too, and she lost her amiable disposition. She took to going around the kitchen with a hammer and nail, tapping, tapping, determined to find its achilles heel, the chink in its armor.

Having gone over the whole interior many times, she was almost forced to admit that the new kitchen was more inflexible than her will. She could find no place to drive that nail. At last, flushed and angry with frustration, she opened the window above the sink. The thought came to her that she could build a little shed outside the window in which to lodge the swab. She tapped the window frame—she knew the sash was metal.

The frame was metal, too. In anger she gave a vicious whack at the rim of the fly screen. An almost forgotten sound, as musical and soft and seductive as a muted 'cello, fell upon her ears. She used the hammer once more, and knew she had touched wood.

With a satisfaction not to be experienced short of redecorating an entire house, she drove her nail into the wooden screen and on it hung the swab. Of course, the window had to be opened to get at it, but that took little effort, and winter was a long way off.—Edward Longstreth in *The New Yorker.*

Why Not Convert to LP Gas?

A discussion of small manufactured gas plant problems and the economic advantages of converting to liquefied petroleum gas

Because of space limitations it has been necessary to divide this article into two parts. Part I, which follows, covers the distribution system before and after conversion and effects of the conversion on the system. Part II, which will be published in the September issue, will cover a discussion of the various types of liquefied petroleum gas and one conversion procedure. The conversion of the property used as a basis for much of this discussion was to natural gas. The natural gas is a dry gas similar in behavior to LP gas and offers almost identical distribution system conversion problems. The other discussions of LP gas are from the author's actual experience over a period of fifteen years in the engineering and operation of eleven systems utilizing LP gas.

BY PAUL E. PEACOCK, JR.

Martinsburg Gas and Heating Co., Martinsburg, W. Va.

PART I

Paul E. Peacock, Jr.

MANY owners of small manufactured gas plants are finding it increasingly difficult in the face of rising costs to meet competition under present operating conditions. The salvation of many of these plants lies in conversion to liquefied petroleum gas. Quite a few owners have realized this and are making plans to convert as soon as equipment is available. With this in mind the author has written this paper in the hope it may be of assistance to some operators.

The advantages of converting to LP gas are many, but the greatest is that of economy of operation. Few small manufactured gas plants can begin to compete with LP gas on a "cost at the meter" basis. In making cost comparisons one must also take into account the many advantages of LP gas not directly associated with production costs.

Some advantages of LP gas are:

1. Because it is a clean gas and free from the deposits common to manufactured gas, the number of service calls will be greatly reduced.

2. It is possible to maintain a closer heating value of the gas and thus further reduce the number of customer complaints.

3. Capital outlay for an LP gas plant is much less than for a manufactured gas plant and the interest on the investment is correspondingly low.

4. Depreciation is negligible as compared with a manufactured gas plant.

5. Because equipment operates automatically there is no need for a regular plant operator. Supervision of the automatic controls can be done by one of the service men or the manager of the property himself.

6. Distribution operation expenses will be materially reduced because of the cleaner gas which eliminates drip pumping, etc.

7. With LP gas should come an improvement in customer relations and the acceptance of gas as the modern fuel. The cleaner gas will place the company in a better competitive position.

Since we have discussed some of the advantages of liquefied petroleum, it would be well to go into detail on some of the angles to be considered in converting a manufactured gas plant.

If manufactured gas left the plant entirely free of all suspended matter and remained in that state up to the point of consumption, then the matter of converting to LP gas would be a simple procedure. However, this ideal condition seldom exists in the larger plants and almost never in a small one. The result is that the entire distribution system, the meters, regulators and consumers' appliances are coated internally with deposits of various types.

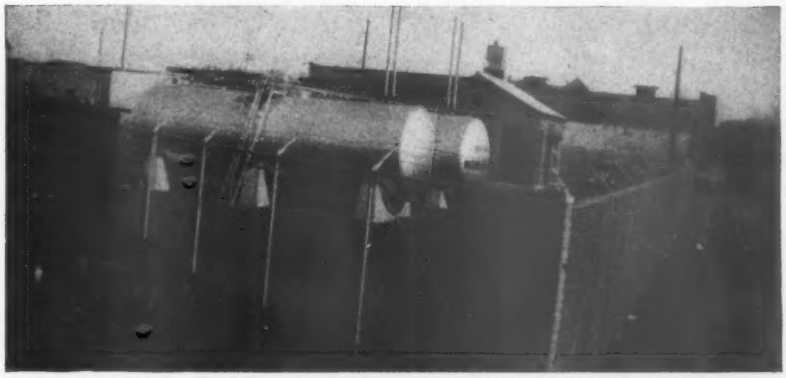
Distribution System Before Conversion

In the average small manufactured gas plant, tar, gum and naphthalene are passed out into the distribution system where they condense in the mains, services, regulators, meters and appliances. The degree or extent of these deposits is controlled by the amount of equipment available at the plant for cleaning the gas and by the extent that good manufacturing procedure is followed.

It is possible to have equipment to remove a very high per cent of the impurities found in raw manufactured gas, but the complete equipment is usually too expensive for the average small plant. Because of the deposits thus passed out into the system it will be necessary to give special attention to the deposits when converting to any dry gas such as LP gas.

The property on which much of this conversion discussion is based was in as bad a condition as will be found in so far as deposits are concerned. For this reason it should not be assumed that all properties will have the degree of trouble encountered on this one.

Before the conversion was started sev-



Butane-air gas plant at Ozark, Alabama, which utilizes Cutler-Hammer gas mixing controls. City hall may be seen in background only two blocks away, showing possible location of plants

View of the Brewton, Alabama, municipal butane-air gas plant which utilizes proportioning valves for mixing control and has the tempering coils installed in vapor lines to eliminate varying B.t.u. values

eral samples were cut out of the mains throughout the system to determine the extent of the deposits. These samples gave an indication of the problem to be faced after conversion. As a further check, the meters were examined and it was found the diaphragms were thoroughly impregnated with gum and tar which had entirely replaced the diaphragm oils.

Because the deposits were so heavy, equipment was bought and arrangements made to rehydrate the converted system with steam and oil fog. This was advised by leading engineers as a preventive for drying of the mains, services and the meter and regulator diaphragms.

The effect of the conversion on each part of the distribution system will be discussed separately.

MAINS: No noticeable benefit was realized from either the steam or fog. This statement is made because the deposits dried out and naphthalene was prevalent despite the steam and oil fog which was to correct the condition.

As the deposits in the mains evaporated and dried out, a serious leakage problem developed. The leakage was first noticed to be increasing about six months after conversion, and it increased considerably for the next six months until it was finally brought under control. Had better leakage control been maintained before and immediately after conversion, the matter would not have reached such proportions; and it need not offer a serious problem with any conversion.

At first several months were spent in installing main line valves so the system could be sectionalized for leak checking. As the leakage began to get out of hand it was necessary to abandon the valve project for the time being and resort to other methods of leak finding. If the valves necessary for sectionalizing had been installed before conversion the matter of locating the leaks would have been greatly simplified. The installation of such valves prior to conversion is highly recommended.

"Vegetation" Method for Leakage

Since it was not possible to use the sectionalizing method of locating leaks in this system the "vegetation" method was selected as next best. The author does not profess to be an expert in vegetation surveys, but after some preliminary checking the method was found to be quite simple and very reliable. The leakage had by now become so great it was no trouble to spot dead or dying vegetation at many points throughout the system. Most of the indicated leakage was at street intersections.

After one or two street intersections had been opened, it was found that the source of the leakage was old-style Dresser cast-iron fittings. These old fittings had been used at every intersection where laterals were run to side streets or where lines joined. The gaskets used had been the old style which were not tipped to protect them from the deposits in the main.

Until the conversion the gaskets had been replaced by the deposit which had destroyed them and the joint had been left sealed. As the dry gas came in contact with the deposit, it began to evaporate and dry out and left the joint unsealed. A bad leak was the result. To repair the leak, a new gasket was installed under pressure. The gasket seat was thoroughly cleaned and soap was packed in back of the seat to seal the joint while it was being cleaned. The new gasket was installed after it had been cut in two on an angle.

After the first leaky fittings had been repaired, the system was covered systematically and every intersection opened where gas mains joined or crossed. With few exceptions all of the fittings were found to be leaking.

Fortunately the soil condition was such that all of the lines were in almost perfect condition in so far as rust was concerned, and no main leaks were found other than at the fittings mentioned. With some properties this will not hold true and the pipe will be found badly pitted. Where this condition exists some leakage can be expected from rust and pit holes which may be sealed off with the deposits in manufactured gas.

Very little trouble was encountered with the mains because of the conversion except for the leakage. The first winter some trouble was given with naphthalene deposits collecting in small mains but this was not serious. Two small mains were plugged off by naphthalene which were cleared by injecting gasoline into the main through a service uphill from the obstruction and allowing it to run down to the obstruction. After the gasoline absorbed the naphthalene, it

ran on to a drip where it was pumped out. The location of the obstruction was found by checking pressures from block to block and then service to service until the obstruction was located between two services.

SERVICES: As with mains, the soil condition was not hard on the service lines and none of them were found to be pitted. The main source of leakage with services was at gaskets and most of these were gaskets under service saddles. The repair of the leak was quite simple and consisted of loosening the saddle bolts and installing a new gasket. Lead ring gaskets were used for the repairs, but sometimes these are not the best if the connection is not below the frost line. In the case of lead gaskets under saddles above the frost line, the action of the frost may loosen the lead seat and cause a leak, since the lead is not as resilient as a composition gasket.

While soil conditions did not affect the service lines of this particular property, this will not hold true with all systems. Some older systems may have badly pitted services which will have to be replaced once the deposits are evaporated. Many of these old services will be leaking with manufactured gas, but with leaks so small they are not considered serious enough to bother with. As with the mains, if all the existing leaks in services are repaired before the conversion, the leakage after conversion will not be serious.

In replacing services, one less expensive way is to install copper tubing by running it through the old service pipe. This saves the labor of digging the service ditch, cutting the pavement except at the main, and eliminates the ill will of the customer caused by digging through his lawn.

Other than the leaks at the gaskets very little trouble was encountered with service lines. However, some trouble was given by naphthalene deposits obstructing the service and this was dealt with the same as with the mains. Another trouble was from the moisture which collected in some shallow services and froze during the winter. The frozen moisture was usually removed by injecting alcohol into the service and then blowing it out into the main. In a few stubborn cases an electric thawing machine had to be used by connecting it between two adjoining services. Because of the moisture the rehydration equipment was shut off the first winter and no more trouble developed. The naphthalene disappeared after the first winter and it was thought all of it had been evaporated and picked up by the passing gas and expelled through the burners.

METERS: Second to the leakage in importance was the meters. As pointed out under the section covering the system before conversion, the meter diaphragms were thoroughly impregnated with gum and tar. This impregnation with gum and tar and the replacement of the diaphragm oils is what caused the meter trouble.

This small manufactured gas property did not maintain a meter repair shop for repairing tin meters. Such meters were sent to the factory or a larger property for repairing and rediaphragming. As a result of not having a meter repair shop this property had been gradually replacing tin meters with another type which could be easily rediaphragmed locally. Approximately fifty per cent of this latter type of meter was in use. The other fifty per cent consisted mainly of old tin meters far past their normal life of usefulness.

Inside view of plant with the two small gas compressors and pipe trench grating in view. Compressors are connected so they can pump into storage tank or direct into distribution mains. Note cleanness of plant

Another view of butane-air gas plant showing distribution meter with combination Emcorector correcting gauge and also temperature recorder and tool board on the wall back of the meter

It was hoped before conversion that the oil fog would protect the oils in the meter diaphragms and keep the diaphragms resilient, but as mentioned before, the gum and tar had replaced the oil and so impregnated the diaphragm the fogging oil did no good at all. While the degree of the deposits and the age of the meters in this property presented a serious problem it is doubtful any other property will face a meter problem so severe.

At first customers complained from fluctuating pressure and pilot light outage. The pressure would fluctuate and the pilots go out from a sudden drop in pressure caused when larger burners were turned on and the meter was slow to respond. *(Continued on page 367)*

Nominating Committee Reports for 1945-1946

E. J. Boothby

FOR PRESIDENT

ANNOUNCEMENT is hereby made to the membership of the Association, in accordance with Section 2 of Article II of the by-laws, of the following report of the General Nominating Committee which will be presented at the Annual Meeting:

For President—E. J. Boothby, Vice-President and General Manager, Washington Gas Light Company, Washington, D. C.

For First Vice-President—R. H. Hargrove, Vice-President, United Gas Pipe Line Company, Shreveport, La.

For Second Vice-President—Hudson W. Reed, President, The Philadelphia Gas Works Co., Philadelphia, Pa.

For Treasurer—Edward F. Barrett, President, Long Island Lighting Company, Mineola, N. Y.

For Directors—two-year terms:

J French Robinson, President, The East Ohio Gas Co., Cleveland, Ohio.

R. E. Fisher, Vice-President, Pacific Gas & Electric Co., San Francisco, Calif.

Walter C. Beckjord, Vice-President and General Manager, Columbia Gas and Electric Corp., New York.

C. M. Cohn, Chairman of Board and President, Consolidated Gas, Electric, Light & Power Co. of Baltimore, Baltimore, Md.

E. H. Eacker, Vice-President, Boston Consolidated Gas Company, Boston, Mass.

J. N. Greene, President, Alabama Gas Company, Birmingham, Ala.

H. E. Handley, President and General Manager, Handley Brown Heater Co., Jackson, Michigan.

D. A. Hulcy, President, Lone Star Gas Company, Dallas, Texas.

Henry E. Morse, Vice-President, Florence Stove Co., Gardner, Mass.

E. P. Noppel, General Consultant, Ebasco Services Incorporated, New York, N. Y.

Clifford E. Paige, Chairman of Board and President, The Brooklyn Union Gas Company, Brooklyn, N. Y.

E. J. Tucker, Director and General Manager, Consumers Gas Co. of Toronto, Ontario, Canada

Respectfully submitted,
ERNEST R. ACKER, *Chairman*
GEORGE S. HAWLEY
R. E. WERTZ
T. J. STRICKLER
F. S. WADE
LYLE C. HARVEY

FOR VICE-PRESIDENT

R. H. Hargrove

Hudson W. Reed

FOR TREASURER

Edward F. Barrett

FOR CHAIRMAN

E. F. Embree
Accounting Section

Harry A. Sutton
Industrial & Commercial Gas Section

Frank H. Adams
Manufacturers' Section

Charles A. Tattersall
Publicity & Advertising Committee

FOR DIRECTOR*

J French Robinson

R. E. Fisher

Walter C. Beckjord

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H. E. Handley

D. A. Hulcy

Henry M. Morse

E. P. Noppel

Clifford E. Paige

E. J. Tucker

FOR VICE-CHAIRMAN

J. J. Quinn
Residential Gas Section

Lester J. Eck
Technical Section

Leith V. Watkins
Accounting Section

Karl Emmerling
Industrial & Commercial Gas Section

W. M. Chamberlain
Residential Gas Section

C. S. Goldsmith
Technical Section

Section Nominations

The following have been nominated by Section Nominating Committees to serve as Section officers for the next Association year:

Accounting Section: For Chairman—E. F. Embree, General Auditor, New Haven Gas Light Company, New Haven, Conn.

For Vice-Chairman—Leith V. Watkins, Secretary-Controller, Panhandle Eastern Pipe Line Company, Chicago, Illinois.

Industrial & Commercial Gas Section: For Chairman—Harry A. Sutton, Asst. Gen. Ind. Fuel Rep., Public Service Electric & Gas Company, Newark, N. J.

For Vice-Chairman—Karl Emmerling, Asst. Gen. Supt., The East Ohio Gas Company, Cleveland, Ohio.

Manufacturers Section: For Chairman—Frank H. Adams, General Manager, Surface Combustion, Inc., Toledo, Ohio.

Publicity & Advertising Committee: For Chairman—C. A. Tattersall, Niagara Hudson Power Co., Syracuse, N. Y.

Residential Gas Section: For Chairman—J. J. Quinn, Sales Manager, Boston Consolidated Gas Company, Boston, Mass.

For Vice-Chairman—Wallace M. Chamberlain, Sales Manager, Michigan Consolidated Gas Company, Grand Rapids, Mich.

Technical Section: For Chairman—Lester J. Eck, Vice-President, Minneapolis Gas Light Co., Minneapolis, Minn.

For Vice-Chairman—C. S. Goldsmith, Engineer, Distribution, The Brooklyn Union Gas Co., Brooklyn, N. Y.

* Photograph of one of the nominees for director, J. N. Greene, was not available as this issue went to press.

Gas Sales Training Program Commended To C.E.D. as Postwar Job Builder

R. E. Williams

THE gas industry's intensive and well-organized program to develop a much greater force of trained sales personnel than ever before in its history has been called to the attention of the Committee for Economic Development as a potent factor in creating more postwar jobs. The latter committee, which has functioned as a national organization since the war and is supported by many civic and business interests, has done much to make the country aware of its postwar responsibilities.

At the suggestion of the Residential Section, J. H. Warden, chairman, and upon motion of the Executive Board of the American Gas Association, the work of the Committee on Selection and Training of Sales Personnel, headed by R. E. Williams of Binghamton, N. Y., was called to the attention of the Committee for Economic Development.

Two specific steps were cited in a letter from Alexander M. Beebee of Rochester, chairman of the A.G.A. Postwar Planning Committee, to Paul Hoffman, chairman of the board of the Committee for Economic Development. First, Mr. Beebee called attention to the postwar committee's basic recommendations to the gas industry, No. 2 of which reads:

"Each utility should study and be prepared to assume its share in the postwar employment situation. Our committee urges each company to take recognition of the part the gas industry plays in our system of society and by means of its contacts with various postwar planning groups in each community to be prepared to shoulder its share of employment in reconstruction problems, so that it can be said that the gas industry was found ready and able. We must remember that winning the peace is just as essential as winning the war and employment in the postwar period is a problem that must be shouldered by every industry."

Secondly, Mr. Beebee referred to the program of Mr. Williams' Committee on Selection and Training of Sales Personnel. "This committee," he wrote, "is sponsoring an intensive program of qualitative selection of sales personnel and is preparing a comprehensive training course in two sections: (1) Indoctrination of gas industry fundamentals, and (2) Residential gas salesmanship for use by gas company and dealer salesmen. The objective of this program is in the training of men to sell more equipment, thus doing our part in creating additional jobs."

Integrated New Freedom Gas Kitchen Offered by Servel, Inc.

N. E. Wooters

THE combination of a sink, range, and refrigerator, the three basic appliances for a kitchen, integrated with the proper cabinets and accessories to form a working unit will be offered in the New Freedom Gas Kitchen designed by Servel Inc., Evansville, Indiana, it is announced by George S. Jones, Jr., vice president in charge of sales. The new kitchen awaits only the release of materials and manufacturing facilities before getting underway.

This new addition to the Servel line will, with the exception of the CP gas range, offer a kitchen from a single source of supply complete with all component parts in integrated design including refrigerator, cabinets, sinks, and accessories.

Mr. Jones also announced the appointment of N. E. Wooters as product sales manager of the Kitchen Accessories Division of Servel. Mr. Wooters, who formerly was in charge of the company's Multiple Housing Division, has had long experience in apartment house sales, government housing programs, and contacts with the building trades.

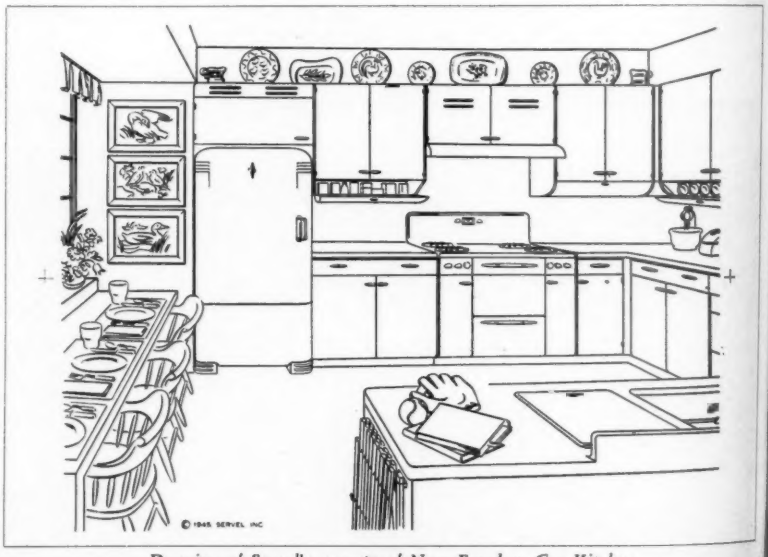
The Kitchen Accessories Division of Servel Inc. will be operated similar to other production divisions of the company. It will handle the distribution of cabinets, sinks, and accessories in relation to the new Servel Gas Kitchen.

In announcing the new program Servel, according to company officials, is not disposed to enter into major competition with any of the companies manufacturing lines of kitchen cabinets. The company's only interest is in its own concept of the New Freedom Gas Kitchen as a revitalizing factor in the promotional program which has been carried on by the American Gas Association on the national level.

The sink, cabinets, and other accessories of this new kitchen have been so designed that they will have identity, distinctive qualities, and utilitarian beauty all of which will work toward greater sales appeal for the two basic gas appliances. Removal of steamy vapors and objectionable odors will be another feature of the Servel New Freedom Gas Kitchen which will add greatly to its sales appeal. Research is continuing and other developments will be introduced at a later date.

Servel also announced at the same time a complete program of local promotion which will come along with the new kitchen design. This program will include a campaign portfolio which will be produced as soon as possible.

In addition a training program will be provided which will cover sales, application planning, and installation and service to help gas companies promote the new kitchen. Another feature will be a series of display kitchens, and fixtures for setting up Kitchen Planning Centers in gas company salesrooms.



Drawing of Servel's concept of New Freedom Gas Kitchen

Saga of a Frontier Fuel—Natural Gas

Pioneer drillers, riggers, promoters and prospectors of America put their shoulders to the wheel in development of the Canadian natural gas industry

Part II*

BY H. J. HENSE

American Gas Association Testing Laboratories, Cleveland

SHARP contrast marks present-day natural gas field operations as compared with the hardships, trials and tribulations experienced by the pioneers of the industry. The rugged life they led is remembered well by many including E. C. Steele, general superintendent of Union Gas Company of Canada, who started as a team driver for the Provincial Natural Gas and Fuel Company at the turn of the century.

Every time Mr. Steele looks east toward Fort Erie and Buffalo from his headquarters in Chatham his mind conjures a picture of his old friend, C. N. Glenny, now president of the Provincial company, sleeping peacefully in the early spring, completely undisturbed by the sound of the crushing ice of the Niagara River. Days were when the beginning of the heavy ice run from Lake Erie always was a period of anxiety. As the ice crowded the shores, the 5 high-pressure gas lines supplying Buffalo would strain and weave and then would come the big spurt of water indicating that one of the lines had gone. Today Mr. Glenny may sleep well, for the river lines have been replaced by a 10-inch line over the Peace Bridge, now bringing gas into Canada.

One Line Meets Ice Test

On one occasion Mr. Steele recalls that the ice flow was particularly heavy. Accompanied by several other workers with their equipment, he had made his way to the river lines over muddy, practically impassable trails. There they stood watch, walking the shore day and night, observing the movement of the lines and checking pressures. One by one the lines gave way to the ice, each break accompanied by the familiar spurt of water and the excitement of getting the broken line shut off and maintaining service through the remaining ones. Finally but one line remained in service, weaving dangerously in the earth at the edge of the river. "I can still feel the shivers that ran up my back as I sat on the bank watching, practically helpless" Mr. Steele says. "Fortunately the last line stood the test and Buffalo was not deprived of its gas supply from that source."

Later in the season came the repairing. With the aid of tugs and scows with hoists, divers would descend to make repairs in those instances where the damage had not been too great. Sometimes it was necessary to pull a portion of the line up on shore, relay it, put on the river clamps and then pull it back into place with tugs.

Teamsters Ruled Roads

It was an era when the teamsters ruled the roads. It meant rising at 4:45 A.M. with the exception of Sunday when one could sleep until 6:00 o'clock, caring for several teams morning and evening, hauling drilling rigs, tools, cable, boilers, casing and tubing. At those times that the horses were not moving the teamsters joined in the labors. More often than not calls came during the night for urgently needed help or equipment. Mr. Steele recalls arriving at a drilling rig at 10:00 o'clock or midnight, helping with a casing or fishing job, and finally rolling into a horse-blanket under the drilling boiler for a few hours before starting out again on a regular day's work.

Mr. Steele was 8 years old on the day that the Coste brothers brought in their discovery well. Although it was in reality only 250 miles away from his home in Welland County, it seemed across the world. Denis Coste became his friend and inspired his rise in the industry. The first well-known character associated with his early Welland County days that Mr. Steele recalls was Charles Higgins who at that time was a tool pusher employed by Provincial and whom Mr. Steele considered as his hero.

Mr. Higgins had come into the area from Bradford, Pennsylvania, with the excitement that prevailed on the opening of eastern Ontario production. He was typical of the pioneers who followed the development of the industry, moving about in the United States and Canada as events and the need for experienced men dictated. It was the life of not only the worker, the driller and rigger, but of the promoter and prospector as well.

Many others operated in both the United States and Canada, among whom were Frank Stover of Pennsylvania, David and Jacob Tripplehorn of Ohio, and the 4 Wesner brothers of Indiana. These men were all drillers. Mr. Stover's father had been a drilling contractor, putting down hundreds of wells in the Pennsylvania area. The son came to Canada in 1900, drilling first on Prince Edward Island for the government. He came to the Welland field 2 years later, drilling for Provincial and also carrying on a general drilling contracting business. He did some drilling in the Haldimand field and to a much greater extent in the Tilbury and Dover fields of Kent County, the original Essex County strike where in 1905 the Tilbury field followed the earlier developments of the Essex field in the west and the Welland-Haldimand fields in the east.

Forerunner of Canol Project

It was in the early 1920's that Mr. Stover drilled for Fort Norman Oil Company at Fort Norman on the Mackenzie River in the Northwest Territories. Discovery and development by Imperial Oil Company, Fort Norman Company, and others established production in this area which was the forerunner of the great Canol project about

*The first installment, depicting the origin of the Canadian gas industry, appeared in the June issue. This concludes the article.

which so much has been heard in recent times. Isolated, the oil could not then be economically marketed.

The Tripplehorn brothers entered the Tilbury field in 1907 and drilled extensively there and in the Dover field. They went to Texas in 1919 and are believed to be active there today. The Wesner brothers did most of the early drilling in the Vienna field of Elgin County which was discovered by Eugene Coste and opened in 1910. Markets in this area are served by the Medina Natural Gas Company and the Central Pipe Line Company. These companies are managed by R. L. Pattinson who also contributed largely to the development of the Vienna field.

Mr. Pattinson, as a young man, came from Buffalo to southwestern Ontario and was interested in several phases of production and development in the Tilbury field. Today he also manages the American Engineering Company, whose production in the D'Clute field of Kent County goes to the Union Company and is active in the United States as far distant as Texas. An independent consultant, particularly in the fields of exploration and development also interested in U. S. projects was E. P. Rowe of Toronto who died a few years ago.

It is characteristic of the natural gas industry that it not only closely paralleled in many ways events of industrial expansion in the new world, but that often it was given a lift by outside forces who recognized latent possibilities on which they could capitalize. Such an influence has been seen at work in recent times in the building of long distance transmission lines by outside capital. Actually it represents the continuation of progressive forces working toward natural industrial growth which in earlier days exerted themselves in such forms as land grants to railroads and settlers and prospectors, keen competition, corporate consolidations, and the development of working agreements between competitors and even industries.

Expansion in Ontario

Outside forces were attracted to the important natural gas fields of southwestern Ontario at an early date. Soon after the discovery well of Essex County and a few others had proven the territory, the initial 40-mile pipe line to Windsor and Detroit, as well as the further expansion of the field, was accomplished largely by the Walker interests, distillers and brewers of Walkerville, Ontario. They financed the building of the line, being particularly interested in getting natural gas to their plant. They also served certain other industries and a number of customers in the area adjoining that served by the Windsor Gas Company. Service which went back to manufactured gas in 1904 was restored in 1909, a few years after the Coste brothers organized the Volcanic Oil and Gas Company.

Another industrialist was D. A. Gordon of Wallaceburg, founder of the Dominion Glass Company and active in the establishment of the Dominion Sugar Company. He was instrumental in having in 1910 constructed and partially financed the Northern Pipe Line Company which laid a line from the Tilbury field to Wallaceburg to supply the Dominion Glass Company and the town as well.

This development came about the same time that Volcanic had entered Windsor, both coming as the result of the development of the Tilbury field, probably the most important field of those discovered along the lake. It opened a period of intense competition, bidding for markets sending the price of gas to very low levels. In fact the Wallaceburg line ran parallel to a 60-mile 8-inch line to Sarnia laid the previous year by the United Fuel Supply Company, the Ridgetown Fuel Supply Company and the Rondeau Company. The general pattern of pipe lines is indicated on the distribution map.

All of these companies including Volcanic and Northern Pipe Line became the nucleus of the organization of the Union Natural Gas Company of Canada in 1912. Active in these companies were such men as the Beamer brothers of Detroit, who were instrumental in discovery and development carried out by the Canadian Gas Company, P. W. Roth, P. A. Little and L. E. Willitts of Buffalo and S. L. McKay of Sarnia, all connected with United Fuel and Supply Company as was R. L. Pattinson previously mentioned.

The Union Company not only acquired control of these sources of supply but later on bought out many of the distributing companies in the cities and towns it had been serving. In 1935 it purchased holdings of the City Gas Company of London and laid a 10-inch line 55 miles to the city, changing over from manufactured to natural gas. In 1939 Union discovered the Malahide field in the Elgin County and laid a 10-inch line easterly to London.

Dominion Natural Formed

Similar action by companies in the Tilbury field, their consolidation, and eventual absorption into Dominion Natural Gas Company of the Cities Service organization paralleled the Union Company development. Glenwood Natural Gas Company drilled some very productive wells a few hundred feet off shore in Lake Erie. A pipeline company, Southern Ontario Gas Company, obtained its supply of gas from Glenwood, laid a 12-inch line 150 miles to Hamilton, serving gaslight companies in Woodstock and Ingersoll, Manufacturers Natural Gas Company at Hamilton, and numerous towns and villages en-route. The city of St. Thomas was added later.

Thus, together with earlier developments in the Welland-Haldimand fields the network of distribution lines to markets had become fairly well established. There remained but the entrance of the Union Company into the Hamilton mar-

True, Very True

● Assistants are people who are supposed to help you get things done. Their weakness lies in the fact that: They cannot assist you at the time you want them to assist you, so that you must wait for a time that is convenient to the assistants.

They have to be told how the thing is to be done, but they generally know a better way in which it should be done so that you must spend much time persuading them that the way you want it done is better than the way they suggest it be done.

After they have begun to do it, you find out that they have not done it the way you suggested because they did not understand how you wanted it done; so that it is up to you to assist them in undoing what they have done and starting again the way you want it done.

By this time their feelings will be hurt and you will have to explain to them that it was no fault of theirs that they did not do it the way you wanted it done, but the blame is yours for not making it clear how you wanted it done.

—*The Kalends.*

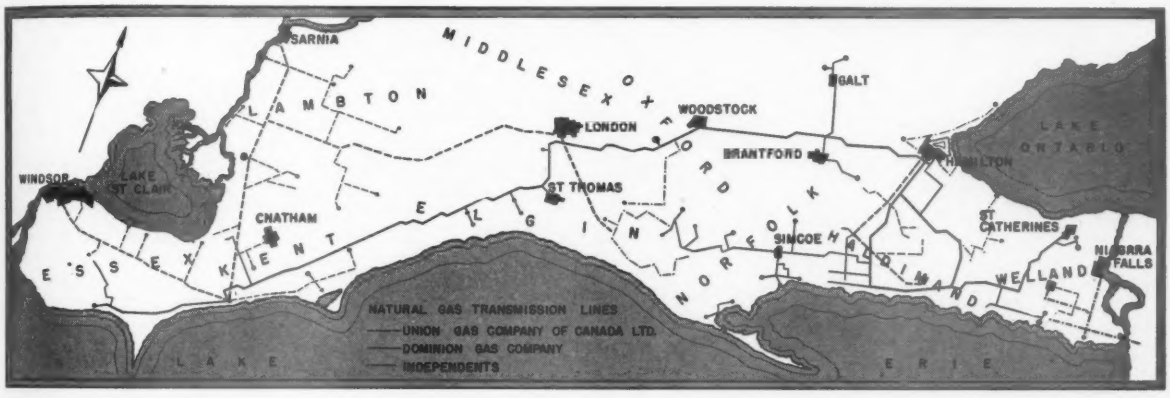
ket in 1930 when it bought out a number of independent producing companies in the Haldimand field and laid a line to that city. Today Hamilton is served with both natural and manufactured gas by companies controlled by United Fuel and Investments, Limited, the ownership of which is shared by both the Union and Dominion organizations. It is indicated on the map as an independent company.

Initially the Tilbury field was opened by the Acme Oil Company of Detroit in 1905. It produced 40 barrels of oil a day and an estimated volume of a quarter of a million cubic feet of gas, although little attention at that time was paid to the gas. Denis Coste estimated that over two billion cubic feet were wasted in freely getting out the oil. taken from it for a few years.

The Dover field in particular, however, marked the tapping of gas in the Trenton formation for the first time, a general strata in which widespread production has been obtained in Ohio and Indiana, but whose exploration in Canada has not been greatly exploited. It lies at depth, around 3,200 feet, and the cost of exploration is high. As long as shallower drilling offers encouragement it is unlikely that much Trenton drilling will be done. So far no area of dolomitzed upper Trenton formation in which U. S. Production occurs, has been found. The Dover field is the only commercial field discovered in this formation some 50 or 60 wells apart from those in Dover having proven discouraging.

War I was composed of W. H. Kiser, his brother Wayne, and David Laur. The Kiser brothers are still active, doing the greater portion of the Union Company's drilling. They had come from Pennsylvania in 1910 where their father and grandfather had been independent oil producers, operating first in Welland County. Between 1916 and 1920 they drilled extensively for the Dominion Company in the Haldimand field. Two other well known drillers of that field were A. E. Hoover and Samuel McKechnie. Mr. Hoover started operations at the turn of the century, later entering the firm of Hoover and May, while Mr. McKechnie began drilling a few years later.

Pioneers in the Tilbury field and Essex County generally included Bon Jas-



Mr. Coste formed a syndicate the following year bringing in a well with an open flow of six million cubic feet, which although it turned to oil rapidly, was the beginning of natural gas production in the area. The Coste brothers at the time formed their Volcanic Oil and Gas Company and laid a line 10 miles to Chatham, the present headquarters of the Union organization. The line to Windsor followed further development of the field.

Excitement prevailing following the Tilbury opening recurred in 1914 when Dr. Fairbanks of Petrolia brought in a thirty million cubic feet well at Oil Springs near Sarnia, the biggest well ever drilled in Ontario, and in 1917 when the Union Company opened the Dover field just north of Tilbury. The Fairbanks well lasted but 3 months and the Dover field was found to be small although large amounts of gas were

Mr. Steele recalls that at the time the deep wells were being brought in, production procedures of this nature were not well understood and equipment for such work was not readily available. He says: "I often think of the loyalty of the men in this industry who were willing to go into those rigs where oil and salt water were spraying many feet above the top of the derrick. They were ready to go up the rig clad in oilskin suits and rubber hats and boots and take their turns in putting tubing into the wells. The men had to work in shifts of about 20 minutes each because that was about as long as a man could endure it. In spite of these obstacles the wells were eventually tubed and closed in with a rock pressure of more than 1200 pounds."

A prominent drilling firm engaged in deep drilling for the Eugene Coste Exploration Company following World

person of Kingsville, George Willitts of Bothwell, B. F. Dowd of Buffalo, Frank Mockworth of Tilbury, and Del Mullen of Ohio. Mr. Jasperson, now in his eighties, was an independent operator interested in Essex gas throughout the entire period, for a number of years being a drilling contractor. Mr. Willitts, who died early this year, drilled extensively and his son, Don, followed in his footsteps until joining the Department of Mines for Ontario 2 years ago. Mr. Dowd was field superintendent for the Provincial Gas Company and after going to Kittanning, Pennsylvania for several years, supervised the interests of the Coste brothers in the Volcanic Company. Mr. Dowd died in 1944 in his early eighties. Mr. Mockworth was an exceptionally well-known rig builder while Mr. Del Mullen was engaged by many companies and individuals to shoot wells. *(Continued on page 367)*

The Gas Industry's Stake in The Home Laundry

Substantial gas load awaits development of national promotional effort on three units

BY H. R. ZEAMER

Supervisor, Dealer Division, The Philadelphia Gas Works Company

THE modern home laundry appliances will represent a substantial volume of retail sales in the postwar period. Laundry is one of the "drudgery" tasks in the home and with adequate appliances it will be only natural for the housewife to seek a way to launder the weekly wash more easily and more economically than in the past.

The gas industry has a big stake in the promotion of the modern home laundry. There is a lot of energy to be sold and the bulk of it can just as well be in the form of B.t.u.'s with gas as KWH's with electricity.

First of all, good results can only be obtained with an adequate supply of hot water. This is particularly true of the automatic-type washer which operates on a time cycle. An inadequate supply of hot water used with such an appliance will not produce clean laundry. The customer might just as well have used the old-fashioned scrubbing board and tub!

An adequate automatic source of hot water is, therefore, an essential requirement in the modern laundry. The fast recovery of hot water through the gas water heater is a widely recognized, desirable characteristic of gas as a fuel. There is no other appliance on the market that can give the equivalent automatic hot water service—the speed, the economy, the freedom from interruption—that can be obtained with the speed-type gas water heater. For the average home, the 30-gallon size has ample capacity, not only to supply the requirements of the automatic washer, but also of the other normal domestic uses as well.

New Sales Approach Desirable

The gas industry nationally and each gas utility locally should share the responsibility of promoting the gas water heater as an important appliance for the home laundry. Every retail selling outlet merchandising a washer should have a gas water heater displayed side by side. In many instances, the two appliances can be sold on one order. One of the country's large manufacturers of oil-fired water heaters has based its advertising on this very theme of the "marriage" of the water heater and washer.

Such a promotional program means that many gas utilities must improve their policies with respect to the sale of water heaters. They must encourage wider representation and distribution by manufacturers in their territories. It also means that dealer cooperation on the sale of water heaters should encompass all retail appliance outlets, not only plumbers but also department stores, furniture and appliance stores.

Another policy that must be examined for the successful promotion of the gas water heater is the retail pricing and corresponding dealer discount. If water heaters and washers are to be merchandised as companion appliances, or sold in the sense of a "packaged laundry," then the discount to the dealer on the water heater must be comparable to the discount on the washer. The utility which wants to promote dealer sales and minimize the dealer emphasis on competititve fuels must take the initiative in seeing that adequate trade discounts are available on water heaters.

Clothes Dryer Market Attractive

The second major appliance in the modern home laundry that deserves the attention of the gas industry is the rotary-type gas-fired clothes dryer. Clothes drying requires a large amount of heat at controlled temperatures that make gas the ideal fuel to attain proper results. For competitive clothes dryers, heavy-duty service is required, which gives gas the advantage of lower initial cost and the normal advantage gas enjoys in operating cost.

In the prewar period, several thousand installations of clothes dryers were made. Public satisfaction with this appliance has been excellent and the operating history of them has been good. Two manufacturers have gas-fired models, and six laundry equipment manufacturers have indicated that a gas ro-

A modern gas clothes dryer

tary clothes dryer will be an important appliance in their postwar line.

The clothes drying market is a completely new one for gas appliance sales. With growing customer acceptance, a great number of dryers can be sold. One leading manufacturer estimates a national potential market of almost 2,000,000 units. If gas utilities reach out for these sales, if they assume the responsibility of seeing to it that gas models are displayed and properly promoted in their territory, gas sales through a clothes dryer can develop into a substantial new residential load.

H. R. Zeamer

Over and above the tremendous unsold home market for clothes dryers, there are numerous other opportunities for sales. Hospitals and nursing homes, many of them small, can use one or more units. Professional offices, such as doctors and dentists are likely prospects. Athletic clubs and gymnasiums, beauty parlors and barber shops, restaurants and taverns, all will be able to use a fast, economical dryer. There are also a great number of people who do family laundries for a livelihood; an automatic gas dryer will materially contribute to their ability to do a better job with greater ease and saving of time.

Difference

● The "boss" drives his men—the leader coaches them.
The "boss" depends on authority—the leader depends on goodwill.
The "boss" inspires fear—the leader inspires enthusiasm.
The "boss" says "I"—the leader says "we."
The "boss" assigns the slavery—the leader sets the pace.
The "boss" says "get here on time"—the leader beats them all to it.
The "boss" fixes blame for breakdowns—the leader fixes the breakdowns.
The "boss" knows how to do it—the leader shows how.
The "boss" makes work a drudgery—the leader makes it interesting.
The "boss" says "go"—the leader says "let's go."

Pressquire.

The clothes dryer presents many sales appeals to the customer. It eliminates the housewife's worry over high winds, which often damage clothes, rains, which delay completion of the laundry, snow or cold weather, which freeze the laundry and add to problems of handling. In metropolitan areas, dust, smoke and soot often ruin a washing and necessitate relaundering.

It is interesting to examine the clear-day record of the weather. From the annual Weather Bureau reports in one metropolitan city, it was found that in the past two years only 27% of the days were absolutely clear. Nature is not working in favor of the housewife and her problem of drying clothes!

The gas dryer is fully automatic, economical to operate. It will save the owner untold time and effort by eliminating lugging wet clothes, putting up and taking down the clothes line, dampening and rolling clothes for ironing. Any appliance that can contribute so much comfort and convenience to the customer will certainly sell if properly endorsed and promoted by gas utilities.

A Third Opportunity

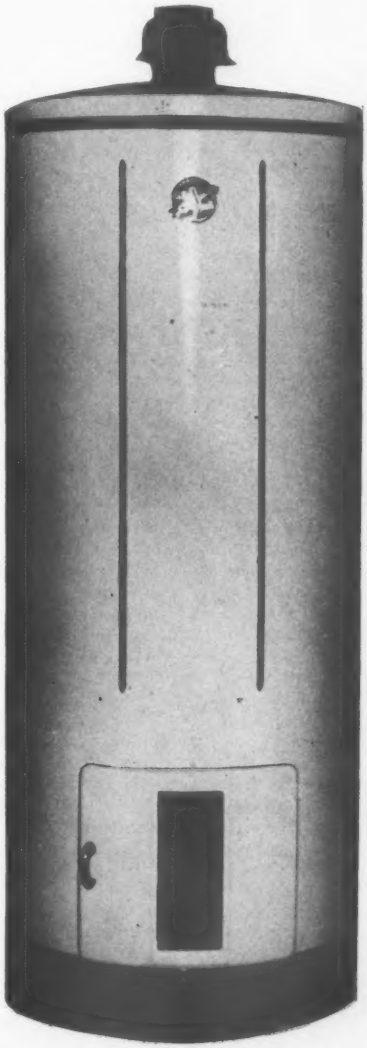
The automatic ironer presents the third appliance in the home laundry that can be a gas application. It is felt that the potential market for such an appliance is limited, since electric competition, either through the hand iron or the console models, is 110-volt. It does not, therefore, require the heat needed for water heating and clothes drying. Nevertheless, gas utilities should promote any modern, new ironer appliance offered by reputable manufacturers.

Modern Laundry Needs Modern Gas Appliances

The promotion of laundry appliances is a challenge to the gas industry because the amount of fuel to be used is substantial. The purchase of a washer, either of the wringer type or the automatic, commits the customer to an adequate hot water supply. It is up to the industry to make gas water heaters the accepted appliance to provide adequate hot water service.

In addition to the load-building possibilities of the clothes dryer, it is a new application of gas for residential use. As such, it popularizes the wider use of gas for the really Big Jobs it does in the home. Just as refrigeration has dramatized gas as a fuel, and as will air conditioning and home heating, the clothes dryer further raises the horizon of additional, modern uses of our fuel in the American home. Sales of clothes dryers, therefore, deserve the serious attention of every gas utility.

It is our responsibility that most models sold will be gas-consuming appliances. Progress of our industry is further assured by promoting gas in the laundry through three out of four possible appliances—the water heater, the ironer, and the clothes dryer.



Modern automatic gas water heater looms large in postwar home laundry market

Intensive Search for Natural Gas Follows Chemical Development

THE most intensive hunt for natural gas in history is going on in Texas, Kansas, Louisiana, California, and the Appalachian area, Henry E. Rose points out in an article in the June 21 issue of *The Wall Street Journal*. Successful research in the chemical field by oil companies' laboratories, notably those of Phillips Petroleum, Shell Oil, and Standard Oil of New Jersey, is one factor behind this increasing interest in natural gas, Mr. Rose reports. Another is the steadily rising demand for gas as a fuel, at prices which give a greater margin of profit than oil.

According to the author, some technologists believe a third area of use for natural gas in the future lies in its conversion into fuel oil and gasoline. "Technicians can turn gas into oil right now, at the rate of a barrel from 10,000 cubic feet, only it's cheaper to buy the oil direct.

"If the nation's oil reserves were gone, however," the article continues, "natural gas reserves now developed could be turned into 17 billion barrels of oil, which would yield more than 11 billion barrels of motor-grade gasoline. This assumes that all the reserves would be diverted from all other uses to making oil, and that the efficiency reached in experimentation could be attained in commercial plants.

New Drilling Extends Reserves

"This year new drilling for gas has extended the boundaries of the Hugoton, Kansas, field, one of the oldest producing fields. Natural gas has been found in Panola county, Texas, almost on the Louisiana line and convenient to the Tennessee Gas and Transmission Co.'s big pipeline from the Nueces county, Texas, fields to West Virginia. A major field has been opened up at Dixon, Calif. The Ohio Oil Co. brought in a well a few weeks ago in Tucker county, W. Va., on the Atlantic slope of the Appalachian chain. Up to the moment this well came in, at 1.5 million feet a day, it could be proved to the satisfaction of almost every oil geologist that a natural gas field east of the Appalachians was an impossibility."

The chemical field, according to Mr. Rose, is believed to hold the greatest promise for natural gas. Research in this field has done wonders in breaking down the gas molecules —"cracking," the industry calls this—and realigning their atoms. This use of natural gas, say some engineers, has barely begun to unfold. They expect it to be the foundation of whole new industries, as well as to compete with established sources of synthetic chemicals. During the war there has been a shortage of laboratory workers, but research may be expected to broaden considerably from here on.

Other interesting information brought out in *The Wall Street Journal* article follows:

Natural gas for fuel has been in great demand by industry during the war. Its use in dehydrating foods has multiplied. The metal-working industries use larger and more complex radiant gas furnaces. Gas fuel helps produce magnesium for aircraft.

Natural gas consumers today pay $800 million a year for the product. At the wells, the annual value is $200 million. Transportation and service absorb the difference. In 1941 the end-product value of natural gas was $600 million.

This year's consumption of natural gas is expected to top 4 trillion cubic feet, a new record. It was 3.8 trillion in 1944 and 2.8 trillion in 1941.

There are approximately 60,000 wells in the country from which natural gas flows. Four years ago the number was 56,000. Recovery from these wells is much greater than from oil wells. Gas reserves in place, for instance, are estimated at 165 to 170 trillion cubic feet. From this, 150 trillion cubic feet of gas is expected to be taken, a recovery of nearly 90%. The average recovery from an oil pool is around 35% or 40%.

Recoverable reserves of 150 trillion cubic feet, without considering possible new discoveries or extensions of existing fields, equal about 35 years' use at the current rate. And the reserves are being augmented at a much greater rate even than the rising demand. Only two years ago reserves were estimated at 100 trillion cubic feet. Today Texas reserves alone are estimated at 65 trillion cubic feet.

Natural gas is consumed in 34 of the 48 states. Largest user is Texas, followed in order by California, Louisiana and Oklahoma. There are 10 million domestic consumers, 785,000 commercial users, and 45,000 industrial ones.

Last year's average price at the well was 5.5 cents per 1,000 cubic feet, compared to 4.9 cents in 1941 and 4.5 cents in 1940.

Mystery Chef Again Broadcasts for Gas

The Mystery Chef

THE Mystery Chef, who broadcast for gas companies from Coast to Coast during the years 1935 to 1938, and who has since been broadcasting over the Blue Network, has resigned from that network so that his broadcasts now are available over independent stations or affiliates of any of the networks.

Many gas companies are availing themselves of the opportunity to sponsor this unique series of broadcasts, which may now be more closely tied in with each local company than was the case previously.

Today the program is offered by transcription and each participating company is mentioned in the middle announcement which is recorded by the Mystery Chef and consists of any particular subject the local company wants mentioned.

When the Mystery Chef resigned from the Blue Network, his principal sponsors were so insistent that he continue by transcription, that the present series was started on May 14, 1945.

Today the preparation of delicious and nutritious meals in the home is more important than ever but the difficulty of doing this presents a very real problem with so many foods now strictly rationed. That problem the Mystery Chef helps to solve in his daily radio chats. His recipes prove how easy it is to prepare the daily meals within the allotment of ration stamps. The program is a great builder of good will and when materials become available the Mystery Chef will again sell gas equipment as he did in his previous series of broadcasts for gas companies.

When the original Mystery Chef series of broadcasts for the Gas Association was terminated many letters from gas companies expressed extreme regret. Speaking at the annual convention of the American Gas Association, James F. Pollard said, "Those companies that did radio advertising with the Mystery Chef got dollars in return for every penny spent."

During a thirty-month period, while the Mystery Chef was sponsored by gas companies, over 3,000,000 copies of his cookbooks were requested and distributed. Today a new idea is suggested, namely: that of furnishing recipes for each week in mimeographed or printed form and having listeners call for them at the local gas companies' offices. Recipes are mailed to sponsors 5 weeks in advance of the broadcast.

The Western Stove Company, manufacturers of Western Holly Gas Ranges, sponsored the Mystery Chef broadcasts for 2½ years over the Blue Network and are now sponsoring this new series of broadcasts by transcription over the Mutual Network Stations in Los Angeles and San Francisco.

Inquiries should be addressed to The Mystery Chef at his home, 14 East 75th Street, New York 21, New York.

Refrigerators in Pacific

SERVEL kerosene refrigerators "appropriated" by Japanese forces in the Pacific in their early conquests and by them taken to islands nearer home are being retaken and used by American conquerors.

A current magazine has an article telling how Seabees presented one of these kerosene refrigerators to the Mission of the Society of the Sacred Heart on Apamama in the Gilbert Islands.

Economics of Gas House Heating

Fundamental factors to be considered when analyzing the heating load and data on the selection of the most economical gas production methods for supplying it

This is the fourth and final installment of a comprehensive study of the "Economics of Gas House Heating." Parts I, II and III appeared in the April, May and June issues. This study clearly indicates the possibilities of reducing substantially the investment and operating costs to serve the heating load by a wise selection of processes and fuels best adapted to meet each local situation. It is a significant contribution as it gives the green light to postwar development of this important market.

BY HALL M. HENRY*

Director of Gas Operations, Negea Service Corp., Cambridge, Mass.

PART IV

Hall M. Henry

THE following study has been made covering a New England gas company and applying the fundamental factors previously outlined. This study estimates the probable peak daily and annual loads caused by a 10 per cent saturation of heating customers and develops the probable investment and gas production costs to serve this load using different gas manufacturing processes. The study also brings to the fore the low plant investment cost required to eliminate certain bottlenecks and thereby increase the capacity of the present plant.

In developing this study the following data have been assembled:

1. A list of days with degree-days above a 30-degree-day day for each heating season of the past 14 seasons.

2. The number of days with degree-days larger than the maximum 10-year average degree-day day (Curve IB).

3. The daily gas sendouts for the most severe winter (1942-43) of the past 14 years are plotted (Curve IIB). Also on this same curve are shown the peaks which would have occurred if this company had had a 10 per cent saturation of heating customers during this 1942-43 heating season.

4. The number of days for each heating season of the past 14 that have degree-days larger than 30-31-32, etc., up to 68 degree-day day (Table 2). This gives the value of L per segment at these degree-day levels per season.

5. The 14-year average number of days per heating season that are larger than 30-31-32, etc., up to 68 degree-day day (Table 2). This gives a 14-year average value of L per segment for these degree-day levels.

6. The 14-year average seasonal degree-days corresponding to certain peak blocks above and certain base blocks below days with degree-days of 30-31-32, up to 50 degree-day day, and their percentage of the normal seasonal degree-days (Table 1, Item B).

General Company Data

A. Company has 45,000 meters.

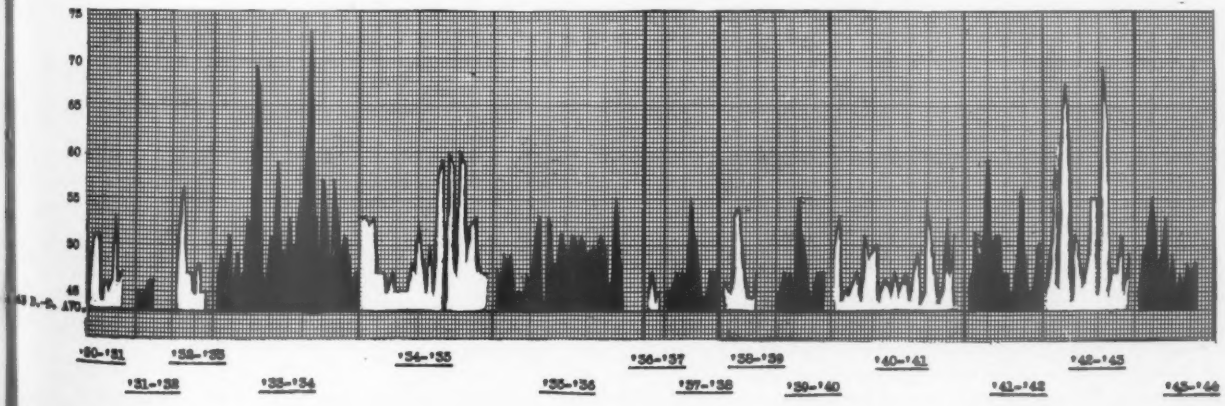
B. Number of heating customers now served is 768.

C. Consumption per degree-day for present heating customers is 60 cu.ft.

D. Present plant daily capacity is 9600 Mcf.

E. Capacity of plant with bottlenecks eliminated is 11,600 Mcf.

Curve 1B, Co. B: Cambridge Gas Co.—Degree-Days Above 43 D.-D. Base



*Chairman, Market and Economic Research Group of the American Gas Association's Committee on Postwar Planning.

TABLE 1, CO. B

(A) VALUE OF L *i.e.* THE NUMBER OF DAYS USE PER YEAR OF PLANT CAPACITY WHEN DESIGNED TO SUPPLY CERTAIN PEAK BLOCKS AND BASE BLOCKS OF MAXIMUM TOTAL DAILY DEMAND

Degree-Days	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
L—Peak Block	21.3	19.6	17.6	16.4	15.0	13.6	12.4	11.1	10.0	8.9	8.0	7.0	6.3	5.5	4.8	4.2	3.7	3.2	0
L—Base Block	—	177.3	174.0	170.7	167.2	164.3	161.1	158.0	155.1	151.9	148.6	145.9	143.1	140.2	137.5	134.7	132.1	129.3	127.0

(B) NUMBER OF DEGREE DAYS PER SEASON (14-YEAR AVERAGE) CORRESPONDING TO CERTAIN PEAK BLOCKS AND BASE BLOCKS AND THEIR PER CENT OF THE NORMAL SEASONAL DEGREE-DAYS

Degree-Days	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Peak Blocks																					
Degree-Days per Season	702	626	558	493	435	381	334	281	251	215	185	155	132	110	92	76	63	51	42	35	29
% of Normal Season D.-D.	11.7	10.4	9.3	8.2	7.3	6.3	5.6	4.8	4.2	3.6	3.1	2.6	2.2	1.8	1.5	1.3	1.0	.9	.7	.6	.5
Base Blocks																					
Degree-Days per Season	—	5320	5394	5464	5529	5587	5641	5688	5741	5771	5807	5837	5867	5890	5912	5930	5946	5959	5971	5980	5987
% of Normal Season D.-D.	—	88.3	89.5	90.9	91.8	92.7	93.6	94.4	95.3	95.8	96.4	96.9	97.4	97.8	98.1	98.4	98.7	98.9	99.1	99.3	99.4

F. Plat investment cost to eliminate bottlenecks is $163,500.[1]

G. Present plant peak sendout is 8000 Mcf (3-day average).

H. Carburetted water gas, 540 B.t.u. and .7 specific gravity, is distributed.

Assumptions

To determine the relative costs of different plants for various load conditions, it is necessary to make certain assumptions as to unit production equipment costs and fuel prices, etc. The following study is based on the factors listed:

1. Water gas plant will cost $150 per Mcf of daily capacity.
2. Hydrocarbon water gas process will cost $40 per Mcf of daily capacity.
3. Butane-air diluting and mixing equipment will cost $5 per Mcf of daily capacity.
4. Propane storage will be used at $1.90 per Mcf of capacity of 540 B.t.u. gas.
5. Cost of water gas in holder will be 30 cents per Mcf.
6. Cost of butane will be 6 cents per gal. (butane will be used).
7. Butane per Mcf of 540 B.t.u. gas is 5.5 gal.
8. Labor and maintenance costs per Mcf of butane-air are 2 cents.
9. Annual fixed charges at 13 per cent.
10. Consumption per degree-day for new house heating customers is 50 cu.ft.
11. Number of new house heating customers at 10 per cent saturation is 4500-768, or 3732.

Procedure

The first problem is to establish the most economical range of operations for the three different gas manufacturing processes. Thus, we want to know the number of days use per year of plant daily capacity, i.e., value of L where the overall gas production costs per Mcf will be the same whether carburetted water gas or butane-air is used, and where the same if hydrocarbon water gas is used. To do this we set up the equations for the value of U for the three gas processes and solve for L.

[1] See study by G. G. Howie as reported to New England Gas Company Managers Conference and published in GAS AGE, Feb. 22.

Carburetted Water Gas

The overall unit costs of gas for the assumed conditions can be determined from:

$$U = \frac{FPt}{L} + H \text{ (since } FS_Lg \text{ does not apply)}$$

$F = .13$ $\qquad$ $L =$ Unknown

$P = \$150$ $\qquad$ $H = .30$

$t = 1$ (have assumed gas consumption per degree-day is the same on a cold day as for the average day)

$$\therefore U = \frac{.13 \times \$150}{L} + .30$$

$$= \frac{\$19.50}{L} + .30$$

Hydrocarbon Water Gas

Similarly, the overall unit costs per Mcf for hydrocarbon water gas, for the assumed conditions, are:

$$U = \frac{FPt}{L} + FS_Lg + H$$

$F = .13$ $\qquad$ $S_L = \$1.90$

$P = \$40$ $\qquad$ $H = 5.5 \times 0.6 + .02 = 35¢$ per Mcf

$L =$ Unknown $\qquad$ $t = 1$

$g = 1$ (We are figuring on enough storage tanks to supply entire seasonal butane needs without taking on any deliveries during heating season.)

$$\therefore U = \frac{.13 \times \$40}{L} + .13 \times \$1.90 + .35$$

$$= \frac{\$5.20}{L} + .597$$

Now, setting the value of U above equal to the value of U for carburetted water gas and solving for L:

$$\frac{5.20}{L} + .597 = \frac{19.50}{L} + .30, \text{ or}$$

$$5.20 + .597L = 19.50 + .30L$$

$$.597L - .30L = 19.50 - 5.20$$

$$.297L = 14.30$$

$$L = 48.1$$

Thus, the overall costs per Mcf will be the same whether

a carburetted water gas plant or a hydrocarbon water gas plant is installed if the plant daily capacity is used only 48.1 days per year. Hence, for all values of L greater than 48.1, carburetted water gas will be the more economical of these two processes and for values of L less than 48.1 hydrocarbon water gas process will be more economical.

Now let us see where the break-even point for the value of L is for butane-air and carburetted water gas.

Butane-Air

The formula for the unit costs of butane-air is

$$U = \frac{FPt}{L} + FS_L g + H$$

$F = .13$ $\qquad H = 5.5 \times .06 + .02 = .35$

$P = \$5$ $\qquad t = 1$

$S_L = \$1.90$ $\qquad g = 1$ (storage tanks equal to annual use of butane)

$$\therefore U = \frac{.13 \times \$5}{L} + .13 \times \$1.90 + .35$$

$$= \frac{.65}{L} + .597$$

Now, setting the value of U for butane-air equal to the value of U for carburetted water gas, we have

$$\frac{.65}{L} + .597 = \frac{19.50}{L} + .30$$

$$.65 + .597L = 19.50 + .30L$$

$$.597L - .30L = 19.50 - .65$$

$$.297L = 18.85$$

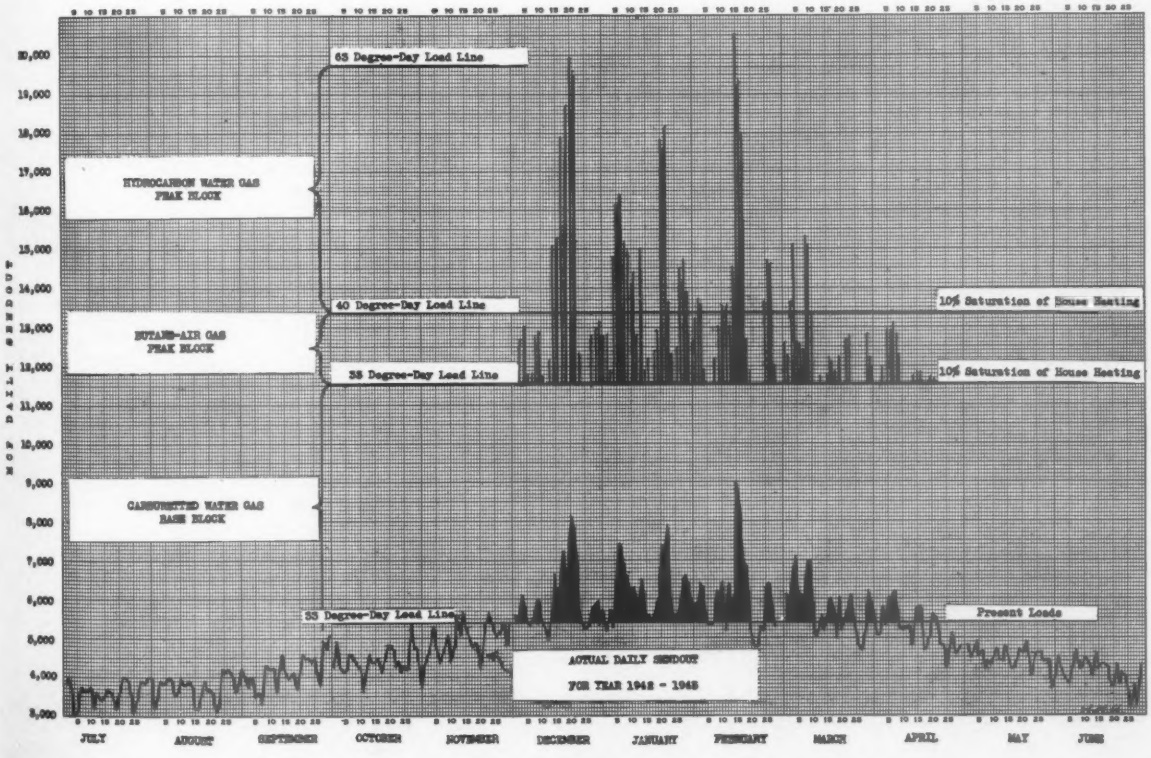
$$L = 63.3$$

Hence, when daily plant capacity will be used only 63.3 days per year the overall costs per Mcf will be the same, with either carburetted water gas or butane-air. Thus, for all values of L larger than 63.3, carburetted water gas will be more economical than butane-air, but for values of L less than 63.3 butane-air will be more economical.

Having determined the number of days' use per year of plant capacity, i.e., value of L wherein the overall costs per Mcf are the same for the different gases, we now can proceed to determine from Table 2 the degree-day level where 1 segment (1 degree-day of daily load) will require the daily plant capacity to operate 63.3 days per year to produce the gas required for this portion of the heating load. This degree-day level establishes the base block and peak block of daily load which the two kinds of gases can handle most economically.

From Table 2 we see L has a value of 65.3 for the 32 degree-day level and 57.7 at the 33 degree-day level. For all practical purposes we therefore can assume that all loads caused by degree-days up to and including 33 per day should be handled by carburetted water gas, and those loads caused by degree-days above 33 (to the extent technically possible) should be handled by butane-air. From the *Butane Handbook* we find that butane-air (of the same B.t.u. as the carburetted water gas and hydrocarbon water gas) probably

Curve IIB, Co. B



can be used only up to 10 per cent of the combined carburetted water gas and hydrocarbon water gas volume. To determine the butane-air plant capacity, we therefore must determine the maximum total daily demand, as will be shown later. The size of the daily plant manufacturing capacities in Mcf for the different gases to produce the most economical overall production costs is found as follows:

1. Carburetted Water Gas—Plant Capacity in Mcf.

It has been shown previously that up to and including a 33 degree-day day carburetted water gas is the most economical gas to use. Hence the Mcf of carburetted water gas capacity is found by determining:

A. The daily use of gas from present loads on a 33 degree-day day. From a study of the sendouts in relation to the daily degree-days this is found to be 5400 Mcf.

B. To this we add for 10 per cent saturation of house heating the consumption caused by 3732 additional heating customers on a 33 degree-day day or

$$\frac{33 \times 50 \times 3732}{1000} = 6158 \text{ Mcf.}$$

C. Hence the carburetted water gas plant daily manufacturing capacity is

$$5400 + 6158 = 11{,}558 \text{ Mcf.}$$

2. Butane-Air—Plant Capacity

Since our calculations show that butane-air is more economical than carburetted water gas for the heating loads on all days above a 33 degree-day day, it is now necessary to determine the maximum total daily demand which the combined plant capacities must supply. It is assumed this will occur on a 63 degree-day day—this is the largest consecutive 3-day average degree-day day in the past 14 heating seasons. The peak load for such a day will be the load on present plant for a 63 degree-day day which is 8000 Mcf plus the additional load caused by 3732 new heating customers or

$$\frac{3732 \times 50 \times 63}{1000} = 11{,}756 \text{ Mcf.}$$

Thus, the total combined plant daily capacities must equal

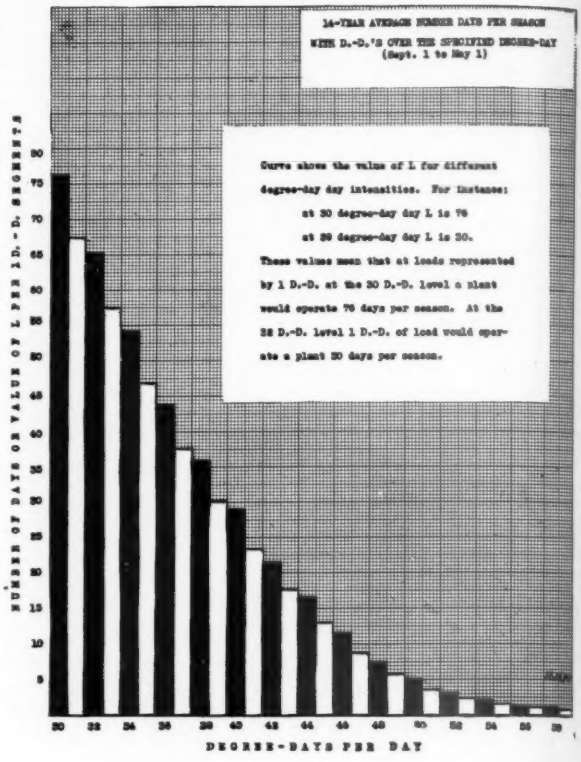
$$8000 + 11{,}756 = 19{,}756 \text{ Mcf.}$$

Now, butane-air can be used only to the extent of 10 per cent of the carburetted water gas plus hydrocarbon water gas capacities and not 10 per cent of the maximum total daily demand. The 19,756 Mcf of combined loads includes the permissible butane-air gas, thus 19,756 Mcf is 110 per cent of the combined carburetted water gas and hydrocarbon water gas. Hence to obtain the volume of carburetted water gas and hydrocarbon water gas we must divide 19,756 by 110 and multiply by 100 or

$$\frac{19{,}756}{110} \times 100 = 17{,}960 \text{ Mcf.}$$

Therefore, the butane-air plant is 10 per cent of 17,960 or 1796 Mcf.

Curve IIIB, Co. B


14-YEAR AVERAGE NUMBER DAYS PER SEASON
WITH D.-D.'S OVER THE SPECIFIED DEGREE-DAY
(Sept. 1 to May 1)
Curve shows the value of L for different degree-day day intensities. For instance:
at 30 degree-day day L is 70
at 39 degree-day day L is 30.
These values mean that at loads represented by 1 D.-D. at the 30 D.-D. level a plant would operate 70 days per season. At the 38 D.-D. level 1 D.-D. of load would operate a plant 30 days per season.
NUMBER OF DAYS OR VALUE OF L PER 1 D.-D. SEGMENT
DEGREE-DAYS PER DAY

3. Hydrocarbon Water Gas—Plant Capacity

It might seem that the hydrocarbon water gas plant daily capacity is the difference between the maximum total daily demand and the sum of the carburetted water gas and butane-air gas plant daily capacities or

$$19{,}756 - (11{,}558 + 1796) = 6402 \text{ Mcf.}$$

While this may be true (and it is in this instance) it is well always to check to see whether the combination of carburetted water gas and butane-air will leave a peak block of daily demand which is more economically supplied by hydrocarbon water gas than carburetted water gas. This is done as follows:

The first calculation is to determine the composite (weighted) consumption per degree-day for the 4500 total heating customers. There are 768 present heating customers who use 60 cu.ft. per degree-day and 3732 new heating customers who use 50 cu.ft. per degree-day. Thus the weighted consumption per degree-day is

$$768 \times 60 = 46{,}080$$

$$\frac{3732}{4500 \text{ total}} \times 50 = \frac{186{,}600}{232{,}680}$$

or, per degree-day

$$\frac{232{,}680}{4500} = 51.7 \text{ cu.ft.}$$

The second step is to determine in Mcf the maximum daily

heating load of which the carburetted water gas and butane-air plants can take care. This is found by taking from the 13,354 Mcf (11,558 + 1796) the combined plant capacities of carburetted water gas and butane-air the 4000 Mcf of load (exclusive of heating now supplied), leaving 9354 Mcf of plant capacity for heating loads.

The third step is to determine the size of the degree-day day which will create a heating load of 9354 Mcf when 4500 heating customers use 51.7 cu.ft. per degree-day and this is done by dividing 9354 Mcf by the product of

$$4500 \times 51.7 \text{ or } \frac{9354 \times 1000}{4500 \times 51.7} = 40.0 \text{ degree-day day.}$$

Thus carburetted water gas plus butane-air can handle on the peak day that portion of the daily load caused by degree-days up to 40.

The fourth step is to determine whether at the 40 degree-day level hydrocarbon water gas or carburetted water gas is more economical. To do this we need only to refer to Table 2 where we see at the 40 degree-day level L has a value of 29.3 and it has been shown previously that for values of L under 48.1 hydrocarbon water gas is more economical than carburetted water gas.

Hence these calculations show that the hydrocarbon water gas plant is economical for the remaining 6402 Mcf of daily demand.

Thus far it has been shown:

1. Carburetted water gas plant capacity should be capable of handling the base block of daily load up to a 33 degree-day day or 11,558 Mcf of daily capacity.

2. Butane-air plant capacity should be capable of handling the peak block of daily heating loads caused by degree-days between 33 and 40 degree-day days (to extent technically possible) or 1796 Mcf of daily capacity.

3. Hydrocarbon water gas plant capacity should be capable of handling the peak block of daily heating loads between a 40 and 63 degree-day day or 6402 Mcf daily capacity.

Now let us see what the comparative overall production costs will be for gas using the three gases to supply the base and peak blocks indicated and using the unit plant costs and other costs previously given. Having determined the base and peak blocks for the most economical gas process, it is now necessary to establish certain factors for these blocks and other data. These are:

Maximum degree-day day	73
Largest consecutive 3-day average degree-day day	63
Normal seasonal degree-days	6022
14-Year Average Seasonal Degree-Days, Table 1, Item B	
a. Above 33 degree-day day	493
b. Above 40 degree-day day	185
Per Cent Above Are of Normal Seasonal Degree-Days, Table 1, Item B	
a. Seasonal degree-days above 33	8.2%
b. Seasonal degree-days above 40	3.1%

Value of L for the different base and peak blocks of the maximum total daily demand is shown as follows:

1. Value of L for the entire heating load

$$L = \frac{\text{Annual degree-days}}{\text{Daily peak degree-days}} = \frac{6022}{63} = 95.6$$

2. Value of L for base block of daily load up to 33 degree-day day

$$L = \frac{6022 - 493}{33} = 167.5$$

3. Value of L for peak block between a 33 degree-day day and a 40 degree-day day

$$L = \frac{493 - 185}{40 - 33} = 44$$

TABLE 2

VALUE OF "L" PER D.D. SEGMENT OR NO. OF DAYS WITH D.D.'s OVER

Co. B, Cambridge, Mass.

Daily D.-D.'s	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
1930–31	64	52	50	45	39	31	28	23	23	22	22	7	14	11	10	8	5	4	4	3	3	1
1931–32	65	49	46	39	37	28	25	21	19	12	10	8	7	5	4	2	—	—	—	—	—	—
1932–33	52	44	41	35	31	27	26	20	18	15	14	12	11	9	9	6	6	3	2	2	2	2
1933–34	95	84	83	73	70	61	60	58	56	53	52	47	43	38	37	33	30	26	24	20	18	14
1934–35	82	78	75	67	64	56	55	51	49	41	41	36	36	33	33	26	26	18	15	14	13	10
1935–36	76	71	69	67	66	62	58	51	51	50	47	40	38	35	31	27	25	23	18	12	8	3
1936–37	70	57	56	46	38	32	30	20	20	17	16	10	9	4	3	1	1	—	—	—	—	—
1937–38	81	72	70	58	53	45	40	34	31	26	26	20	18	13	12	8	8	3	3	2	2	1
1938–39	85	79	78	72	69	59	49	41	40	31	30	20	18	10	8	6	5	3	3	3	3	2
1939–40	93	81	80	69	68	65	59	51	49	44	42	32	25	21	17	13	8	3	3	2	2	1
1940–41	88	80	76	70	66	54	53	44	41	25	24	17	15	12	10	8	8	5	5	3	3	2
1941–42	56	51	49	45	43	37	36	32	30	26	26	21	20	20	20	15	15	10	10	7	6	2
1942–43	85	77	75	66	64	53	51	43	40	32	30	26	26	23	22	18	16	14	13	10	10	8
1943–44	77	69	65	55	53	47	44	40	40	32	30	23	22	17	17	13	11	10	7	4	3	3
Total	1069	945	914	808	762	658	615	530	507	426	410	329	302	251	233	184	164	122	107	82	73	49
Average per Year	76.4	67.5	65.3	57.7	54.4	47	44	37.8	36.2	30.4	29.3	23.5	21.6	17.9	16.7	13.1	11.7	8.7	7.6	5.9	5.2	3.5

Daily D.-D's	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73
1930–31	1	—	—	—	—	—	—															
1931–32	—	—	—	—	—	—	—															
1932–33	2	2	1	1	—	—	—															
1933–34	14	10	9	8	7	7	7	4	4	4	4	3	2	2	2	1	1					
1934–35	6	6	6	6	6	5	5	2	—	—												
1935–36	3	1	1	—	—	—																
1936–37	—	—	—	—	—	—																
1937–38	1	1	1	—	—	—																
1938–39	2	1	—	—	—	—																
1939–40	1	1	1	—	—	—																
1940–41	2	1	1	—	—	—																
1941–42	2	2	2	2	1	1	1															
1942–43	8	8	8	6	6	5	5	5	5	3	3	2	2	2	2	1	1					
1943–44	3	1	1	—	—	—																
Total	45	34	31	23	20	18	18	11	9	7	7	5	4	4	4	2	2					
Average per Year	3.2	2.4	2.2	1.6	1.4	1.3	1.3	0.8	.6	.5	.5	.4	.3	.3	.3	.1	.1					

4. Value of L for peak block above a 40 degree-day day

$$L = \frac{185}{63 - 40} = 8$$

These figures show that a plant designed to supply the maximum total daily demand would have to operate only 95.6 days at full capacity in order to produce the seasonal heating load. On the other hand, a plant designed to supply the base block of the maximum total daily demand up to and including a 33 degree-day day would operate 167.5 days per year at full capacity to produce the seasonal heating load corresponding to this base block. A plant designed to handle the peak block of the maximum total daily demand between a 33 and 40 degree-day day would operate 44 days per year at full capacity to produce the seasonal heating load corresponding to this peak block. A plant designed to handle the peak block of the maximum total daily demand above 40 would have to operate only 8 days per year at full capacity to produce the heating load corresponding to this peak block.

Having established these factors the overall costs to produce gas for the base and peak blocks using the different gases can be determined.

1. Overall Costs if 100 Per Cent Carburetted Water Gas is Used

First, let us see what the overall costs per Mcf would be if we used 100 per cent carburetted water gas and we were now loaded to capacity so that an entirely new plant would have to be built. Substituting the value of L for the entire heating load which is 95.6 in our equation previously developed, we have

$$U = \frac{.13 \times 150}{95.6} + .30 = .204 + .30 = \$0.504$$

$= 50.4$ cents per Mcf.

In this particular company they have made a survey of plant bottlenecks and have found by eliminating these at a cost of $163,500 they can increase daily manufacturing capacity by 2000 Mcf or at a cost of only $81.75 per Mcf of daily capacity. Thus the unit costs per Mcf of daily capacity to supply 11,750 Mcf of new peak load are

$$\frac{2000 \times \$81.75 + 8156 \times 150}{11{,}750} = \$118$$

and the overall unit costs per Mcf become for 100 per cent carburetted water gas under these conditions

$$U = \frac{.13 \times \$118}{95.6} + .30 = .16 + .30 = \$0.46$$

$= 46$ cents per Mcf.

2. Overall Costs Per MCF for the Base Block Using Carburetted Water Gas

The costs for carburetted water gas per Mcf for that portion of the load caused by degree-day day, assuming we had to add water gas plant capacity at a cost of $150 per Mcf, are as follows:

$$U = \frac{.13 \times 150}{167.5} + .30 = .116 + .30 = \$0.416$$

$= 41.6$ cents per Mcf.

However, as pointed out previously, the company can obtain additional daily manufacturing capacity of 2000 Mcf at a cost of $81.75 per Mcf and the company now has plant capacity of 9600 Mcf of which only 4000 Mcf per day is base load, leaving 5600 Mcf available for heating and this added to the 2000 Mcf new capacity equals 7600 Mcf available at a cost of only $163,500. Hence the incremental investment cost per Mcf of daily capacity to supply the base block of the heating load is

$$\frac{\$163{,}500}{7600} = \$21.51 \text{ per Mcf.}$$

Thus, the overall costs under these conditions become

$$U = \frac{.13 \times 21.51}{167.5} + .30 = .017 + .30 = \$0.317$$

$= 31.7$ cents per Mcf, which are the incremental overall costs per Mcf for this block of the heating load.

3. Overall Costs Per MCF for the Butane-Air Peak Block

Substituting the value of L which is 44 in the equation previously shown for the cost of butane-air, we find

$$U = \frac{.65}{44} + .597 = .015 + .597 = \$0.612$$

$= 61.2$ cents per Mcf.

and if carburetted water gas were used, this would cost

$$U = \frac{.13 \times 150}{44} + .30 = .443 + .30 = \$0.743$$

$= 74.3$ cents per Mcf.

4. Overall Costs Per MCF for the Hydrocarbon Water Gas Peak Block

Substituting the value of L which is 8 in the equation for hydrocarbon water gas, we find

$$U = \frac{\$5.20}{8} + .597 = .65 + .597 = \$1.247$$

$= \$1.247$ per Mcf.

and if carburetted water gas were used for this peak block the costs would be

$$U = \frac{\$19.50}{8} + .30 = 2.438 + .30 = \$2.738$$

$= \$2.738$ per Mcf.

These comparative overall costs per Mcf for gas produced clearly indicate the benefits to be gained from a proper selection of gas processes best adapted to serving certain blocks of the heating load.

Composite Investment Costs and Operating Costs

It now remains to determine what the composite cost of gas and investments will be for the most economical production methods under the assumed conditions.

First Investment (to supply total peak day of 19,576 Mcf) Carburetted Water Gas

We have seen previously that the carburetted water gas plant is economical to use up to a 11,558 Mcf peak day. Now the first problem is to survey present water gas equipment to see what will be required to bring its capacity up to this volume. Such a study shows that by eliminating certain plant bottlenecks a capacity of 11,600 Mcf can be obtained by an expenditure of only $163,500. So very little additional carburetted water gas investment is indicated.

Butane-Air

The capacity of the butane-air plant is 1796 Mcf to supply its share of the daily peak loads. The costs for a plant of this capacity will be more than the $5 per Mcf assumed in the calculations, as the $5 unit price is for a 6000 Mcf per day plant. The butane-air plant may cost $10 per Mcf or $10 × 1796 = $17,960. Even at a $10 cost per Mcf plant capacity, butane-air is more economical than carburetted water gas for the peak block selected. For instance, the break-even value of L is

$$\frac{.13 \times 10}{L} + .597 = \frac{19.50}{L} + .30$$

$$1.30 + .597L = 19.50 + .30L$$

$$.297L = 18.20$$

$$L = 61$$

which still leaves (see Table 2) the base block at the 33 degree-day level since L has a value of 57.7 at the 33 degree-day level. The overall costs for the butane-air load however are

$$U = \frac{.13 \times 10}{44} + .597 = .03 + .597 = \$0.627$$

= 62.7 cents (vs. 74.3 cents for carburetted water gas)

Hydrocarbon Water Gas

The daily manufacturing capacity of the hydrocarbon water gas is 6402 Mcf and at $40 per Mcf the plant investment is $256,080.

Storage Tanks

The storage tanks will be determined large enough to take the 14-year average seasonal use and while the operating costs have been figured on using butane as a fuel, propane storage tanks will be installed so either fuel can be used. Now the capacity needed is

493 D.-D.[2] × 51.7 cu.ft. per D.-D. × 4500 customers

= 114,696,450 cu.ft. of 540 B.t.u. gas, or

114,696 Mcf × 6 gal. per Mcf = 688,176 gals., or

$\frac{688,176}{25,000 \text{ gal.}}$ = 28 tanks (30,000 gal. water capacity — 25,000 gal. propane capacity)

28 tanks at $8000 each = $224,000

Hence total new investment to bring plant up to 19,756 Mcf daily capacity to meet the normal plus the heating load for 10 per cent saturation of house heating is:

	With Combined Processes		*100% Carburetted Water Gas*
Carburetted water gas equipment (bottlenecks eliminated)	$163,500		$163,500
Butane-air diluting equipment	17,960	8156 Mcf at $150	
Hydrocarbon water gas equipment	256,080		1,223,400
Propane storage equipment and tanks	224,000		
Total	$661,540		$1,386,900

or per Mcf gain in capacity

$\frac{\$661,540}{(19,756 - 9600)}$ = $65.14 per Mcf vs. $136.55 if 100% carburetted water gas were used

or per new house heating customer

$\frac{\$661,540}{3732}$ = $177.26 vs. $372 if 100% carburetted water gas were used.

The Overall Costs of Gas

Annual Mcf of gas to be made by the different processes

Annual Mcf from new heating load

$\frac{3732 \times 6022 \times 50}{1000}$ = 1,123,705 Mcf

Load to be supplied with butane (butane-air and hydrocarbon water gas)

$\frac{4500 \times 493 \times 51.7}{1000}$ = 114,696 Mcf

Carburetted Water Gas 1,009,009 Mcf

Fixed Charges	
13% X $661,540	$ 86,000.20
Cost of the Gas	
a. Carburetted water gas, 1,009,009 Mcf @ 30c	$302,702.70
b. Butane (both butane-air and hydrocarbon water gas) 114,696 Mcf @ 35c	40,143.60
Total production costs	$342,846.30
Total Annual Overall Costs of Gas	
Fixed charges	$ 86,000.20
Total production costs	342,846.30
Total	$428,846.50

Unit overall costs per Mcf for additional house heating load are

$$U = \frac{\$428,846.50}{1,123,705} = 38.1 \text{ cents per Mcf}$$

vs 46 cents if 100% carburetted water gas were used.

Conclusions

The purpose of these series of studies has been to outline some of the possibilities for meeting the peaks of heating in a more economical manner than if carburetted water gas is used for the entire heating load. It has not been our

[2] From Table I, item B, we find the seasonal degree-days for days above 33 degree-day day total—493 degree-days.

intent to outline all of the possibilities but rather to suggest a procedure which may prove helpful in any local study of the problem. There are several other methods of meeting the peaks of the heating load which should be considered.

For instance, a study should be made to determine how much of an overload can be placed on the various pieces of equipment which make up the standard carburetted water gas plant, also the effect of using butane or propane for hot enrichment, the auxiliary firing of waste heat boilers, the use of a higher B.t.u. butane or propane-air gas. One company has stated it could get a 50 to 60 per cent increase in set capacity through the use of butane for hot enrichment. If these same percentage increases are obtainable by any company, then the gas generating problem to meet the abnormal peaks is solved readily. The auxiliary firing of waste heat boilers is an accomplished fact and at very low investment cost. Thus, it seems possible to secure a low gas generating and a low steam investment cost. The only remaining investment problems are condensing, purification and miscellaneous items. Here, too, we may find much can be done to increase the capacities of present equipment. Some work has already been done which looks encouraging. If the entire industry understands the nature of the problem and thinks about it, a solution can be found.

This study clearly indicates the possibilities of reducing substantially the investment and operating costs to serve the heating load by a wise selection of processes and fuels best adapted to meet each local situation. It is the writer's belief that present methods and practices can be adapted to produce gas at sufficiently low overall costs to justify the gas industry going full speed ahead in post-war to take on all of the heating loads it can obtain. This fact, coupled with the gas production research program now underway, should give full encouragement to the industry so that it can proceed to acquire heating loads with a definite assurance of making them profitable.

New Building Spurs Cumberland Gas Service

CUMBERLAND & Allegheny Gas Co. established headquarters on June 1 in its new three story building at 149 Baltimore St., Cumberland, Md.

The new building houses this natural gas company's commercial business office, home service auditorium, merchandise display floor and facilities for the sales department. It is also the headquarters for Carl C. Robbins, district manager.

The first floor is devoted to customer records, bill paying and customer service activities. On the second floor a home service auditorium has been constructed and is supervised by Elsie Anita Mellon, home service director.

Upward of 100 persons can be accommodated in this meeting room, arranged specifically for home service demonstrations and lectures before Girl Scout, women's, parent-teacher and church groups.

The sales department of Cumberland & Allegheny occupies the third floor.

Moving these natural gas operations from the former North Mechanic Street locations to Cumberland's leading business street has not affected the company's shops and service groups, which will continue to operate at their present location.

Cumberland & Allegheny Gas Co., a unit of the Pittsburgh group of natural gas companies associated with the Columbia Gas & Electric Corp., transmits and distributes natural gas in the territory in, and adjacent to Cumberland, Lonaconing and Frostburgh in Maryland; Gettysburg in Pennsylvania, and Piedmont, Keyser, Elkins, Oakland, Parsons and Kingwood in West Virginia.

Fluorescent illumination and pastel-toned walls contribute to a cheerful atmosphere in the Cumberland & Allegheny Gas Company business office recently opened at 149 Baltimore St., Cumberland, Md. An innovation is the customer service desk—shown at the extreme left—built in as an integral part of the counter where gas bills are paid

New Heating System In T.W.A. Stratoliners

PACKAGED combustion heaters which provide "exact and continuous" control of circulated air are being used on the Stratoliners returned to Transcontinental & Western Air, Inc., according to Surface Combustion Corp.

The company announced that its own engineers and T. W. A. engineers have developed a heating package which fits into the belly of the plane and supplies radiant heating for the passengers. Warmed air is circulated between the insulated inner surface of the skin of the plane and the linen interior finish walls of the cabin.

The heating package contains two Janitrol aircraft heaters of 100,000 B.t.u. capacity each, complete with thermostatic controls, fuel pumps, combustion air blower, ventilating air blower, dampers and other devices for automatic operation.

Meritorious Service Medal To Be Awarded

THE Executive Board of the American Gas Association will bestow the A. G. A. Meritorious Service Medal again this year on the employee of a gas company or a member manufacturer company, who has performed the most meritorious service in saving human life or property while on occupational duty in the gas industry during the period from July 1, 1944 through June 30, 1945.

The award, which is supported by an endowment in memory of Walter R. Addicks, former senior vice-president of Consolidated Gas Company of New York, consists of a gold medal and button, when materials for these are available, and a certificate of merit. A cash equivalent was awarded last year because of wartime restrictions on use of gold.

Forms for applications, which can be obtained from Association Headquarters, should be completed and filed before August 1, 1945.

Atlantic City "Home of Century" Features Gas Appliances

Model "Home of Century" on Steel Pier, Atlantic City, which is equipped with gas appliances

FEATURED in the Steel Pier, Atlantic City, "Home of the Century," to be visited by more than 500,000 people from June 15 through September, a completely automatic gas range built to "CP" specifications. Equipped with time and temperature controls which turn the cooking on and off, even if the housewife is miles away from the kitchen, this type of range will be available immediately after the war.

The "Victory Home of the Century," now being exhibited for the eighth consecutive year, has been designed by William F. B. Koelle, designer of the Steel Pier, to show Atlantic City visitors what they can expect to find in houses built to sell for approximately $8,500. Included in this model home will be a gas refrigerator, an automatic gas water heater, and an automatic gas furnace.

Equipment for the "Victory Home of the Century" was selected on the basis of its practicability, economy of operation, initial cost and cost of up-keep. The gas range on display is built to the gas industry's high "CP" standards, and like all gas ranges bearing the "CP" seal, incorporates exclusive features developed by the manufacturer.

Gas Summer Air Conditioning Report

JOHN deB. SHEPARD, chairman of the Joint Committee on Gas Summer Air Conditioning of the Industrial and Commercial Gas Section and the Residential Gas Section has announced publication of the committee's report—"Technical Advances in Gas Summer Air Conditioning." The committee has carefully analyzed the possibilities of gas summer air conditioning which will be of greatest direct aid to the promotion of gas utilization in this field. The report contains seven chapters beginning with a review of postwar possibilities of gas summer air conditioning by Mr. Shepard.

The chapter setting forth the report of the Technical Advisory Subcommittee by its chairman, G. Elmer May of New Orleans Public Service, Inc., discusses technical air conditioning problems and points the way for future research needed to supply the gas air conditioning engineer with sufficient data to install systems which will provide maximum customer satisfaction.

W. F. Friend, mechanical engineer, Ebasco Services, Incorporated, brings gas air conditioning up-to-date with field experience on gas-operated residential and small commercial installations illustrated with tables on this phase. Following chapters give cost tables on the different types of equipment tested under various conditions.

Gas air conditioning for industrial processing is covered thoroughly in a chapter by Harold S. Birkett, The Brooklyn Union Gas Co., coordinator of industrial air conditioning data of the Joint Committee. Typical industrial systems are illustrated together with typical applications and the supporting data arrived at as a result of the tests.

Refrigerants and absorbents comprise the final chapter by Dr. William R. Hainsworth, vice-president, Servel, Incorporated. An abstract of a paper on this subject, by Dr. Hainsworth, published in *Refrigerating Engineering* covers the types of refrigerants and absorbents which are most suitable to gas air conditioning and the possibilities for new combinations for use in absorption refrigeration systems. Attention of chemical companies is called to the commercial possibilities of the gas air conditioning business and the corresponding quantities of fluids which may be required.

This American Gas Association report will serve as a guide for company activities in the field of gas summer air conditioning.

Gas Abstract Service Offered by Institute

FILLING a long-felt need in the gas industry, the first issue of "Gas Abstracts," monthly review of current literature relating to the gas industry recently made its appearance. Prepared by the technical and library staff of the Institute of Gas Technology, the initial pamphlet contains 20 pages of brief abstracts of outstanding current articles. It is ably edited and each abstract is signed by the individual who prepared it, or the source is given.

A major advantage of this service is that it selects for the attention of the gas industry material judged by the editors to be of immediate interest. This selection of pertinent technical information should be exceedingly helpful, as it makes it unnecessary for each individual to cover the entire field of related literature.

The Institute now has a library of approximately 5000 volumes, a large proportion of which is bound periodicals, and receives well over 100 technical and scientific journals currently.

All papers and publications which are abstracted will be available for use in the library and copies of photostats or microfilms will be provided at cost.

For the time being, distribution of "Gas Abstracts" will be limited to industrial and educational executives. Requests should be addressed on letterhead to the Library, Institute of Gas Technology, 3300 Federal St., Chicago 16, Illinois.

Texas Natural Gas Well Development Spurts

DEVELOPMENT of gas wells in Texas in the first five months of 1945 were three times the number in the like 1944 period. Increasing emphasis on gas production, once considered almost a nuisance by oil operators, is reflected by the completion of 320 wells in January through May compared with 107 a year ago. Thirty-two wells were classed as discoveries by the Railroad Commission, exactly twice last year's total.

A.G.A. Domestic Range Committee Plans "CP" Promotion for Dealers

Looking at the new "CP" dealer kit are L. C. Ginn, American Stove Company, and vice-chairman of the A. G. A. Domestic Range Committee; W. M. Chamberlain, chairman; Ross Roberts, Pyrofax Division, Union Carbide & Carbon Chemicals Corp., representing LP Gas; F. W. Williams, secretary, Residential Section, A. G. A., and James I. Gorton, A.G.A.E.M. "CP" promotional director

A COMPLETE "CP" dealer promotional program designed to assist dealers in selling a greater volume of higher grade gas ranges postwar was put into final form by the Interim Committee of the A. G. A. Domestic Range Committee, held in New York June 27th and 28th. Consultants to the group were representatives of hardware, department stores, furniture, appliance, and LP gas dealers.

In addition to a complete coordinated sales plan, basic recommendations for action on the part of manufacturers and gas utilities included regional dealer meetings, revival of the "CP" Ranger Club and the "CP" Ranger News. More than 8,500 gas range salesmen participated for prizes in the "CP" Ranger Club prewar.

A complete sales training course designed to train new salesmen and to bring older salesmen up-to-date on the latest sale's techniques will be available. Each manufacturer will augment the sales training programs with his own sale's and product stories.

In the recommendations were included plans for close dealer utility cooperation. Major promotional efforts will be directed at clock control gas ranges built to "CP" standards.

The Interim Committee is composed of Wallace M. Chamberlain, who represented gas utilities; Lloyd C. Ginn, promotion manager of American Stove Company, representing manufacturers; Frank Williams, secretary, A. G. A. Residential Gas Section and James I. Gorton, A. G. A. E. M. "CP" promotional director. The LP gas industry was represented by Ross Roberts, Pyrofax Division of the Union Carbide and Carbon Chemicals Corp.

Comprehensive Study of New York Market Made by Consolidated Edison

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC., on June 20 released its comprehensive study of the economic life and the living and buying habits of New Yorkers in the four major boroughs of the city—Manhattan, Bronx, Brooklyn and Queens. Entitled "Survey of the New York City Market," the book contains 124 pages and has 63 charts, 83 tables, and 87 maps.

Distribution of the survey culminated more than a year's work by researchers of the Consolidated Edison staff under the direction of Sherman M. Hall, assistant manager of the economic research bureau of the company.

"We have prepared this market survey," Clarence L. Law, vice-president, said, "in an effort to promote our business by helping our customers promote their business. The more business our customers do, the more business we do."

The survey can be used as a foundation for market analysis to determine the location and degree of buying power, outline sales territories, set sales quotas, check sales efforts, allocate advertising expenditures, and to locate stores or other types of business. Much of the information in the survey has been compiled in connection with the company's studies of the make-up and development of the city for use in planning future requirements of electricity, gas and steam.

The data, organized and presented in graphic form, were obtained from various sources including the U. S. Census of 1940 and local agencies. The company made its own survey of the location and number of six different types of retail stores. In most cases the data are presented by "census tracts," which is the unit used by the Census Bureau. There are 3,343 census tracts in the city.

The survey shows the distribution of New York City's manufacturing by industries, and indicates that New York does 7.6 per cent of the nation's retail business and 23.4 per cent of the wholesale business. With 6.7 per cent of the country's population, New York does 15.5 per cent of the service business, which includes laundries, shoe repair, automotive repair, advertising agencies, etc. Population is classified by race and nativity and by age groups, and under employment, the survey gives a breakdown of the industry groups local residents work for and the jobs they work at.

Particular emphasis in the survey has been placed on housing because the type of dwelling in which a family lives determines many of its most important expenditures. The dwelling not only gives an indication of family income, but it also shows what space is available for equipment and appliances. It is pointed out that apartments are generally not as spacious as one and two-family dwellings and therefore can accommodate less furniture, less lighting, and so on.

For each of the 3,343 census tracts in the four boroughs of the city surveyed, the book gives the number of residential structures, the number of dwelling units, the number of one and two-family houses, the number of owner-occupied homes, the number of dwelling units built before 1900, the number needing major repairs, the type of heating and the fuel used, and the number of mechanical refrigerators.

It shows that Queens leads in the number of owner-occupied dwelling units. In Manhattan 98.8 per cent of the families pay rent, while 1.2 per cent live in homes they own. In the Bronx 91.9 per cent of the families pay rent, in Brooklyn 81.2 per cent and in Queens 63.3 per cent.

The number and location of the following six types of stores are given for each of the four boroughs: food stores, eating places, wearing apparel, general merchandise, drug stores, and home furnishings.

Four separate colored maps are issued with the survey, giving the average monthly rent for each of the 4,000 city blocks in the four boroughs. Rent paid is claimed to be the best index of purchasing power that can be obtained.

Tappan Portfolio

MEET the Challenge" is the theme of a new 28-page portfolio recently put into the hands of the Tappan Stove company's field organization.

This portfolio illustrates some of the important competition factors as "challenges" the manufacturer and dealer will face in the merchandising of gas ranges when the green light is given for volume production of civilian goods.

The constructive steps that are being made to meet these "challenges" are outlined as "answers." Prominent among these are plant expansion, new product development, national magazine advertising, store floor planning and many other things to maintain and strengthen the value of the Tappan dealer franchise.

Midwest Personnel Conference Held

THE fourth American Gas Association Midwest Personnel Conference took place June 7 in Kansas City, Missouri. The meeting was attended by 27 delegates representing seventeen gas companies from the territory served by this conference.

Formal action was taken to include the Midwest Gas Association which serves Iowa, Nebraska, Minnesota, North Dakota, South Dakota, Montana, Wyoming and Colorado. The Executive Council of the Midwest Gas Association had previously petitioned for entrance into the A. G. A. Midwest Personnel Conference.

Highlight of the meeting was the presentation by Oakah L. Jones, R. R. Allen and H. F. Taylor of the job and salary evaluation work being done by the Oklahoma Natural Gas Company. The work is thorough and extensive. The presentation was well received by the membership.

The Chairman, R. B. Harkins, Panhandle Eastern Pipe Line Company, led the group in discussion of various subjects including Wage Rates and Re-employment of Veterans.

The next meeting will be held in Omaha, Nebraska early in September.

Battelle Research Listed

A 72-PAGE catalogue of the publications and patents which have resulted from fifteen years of fundamental and applied Battelle research has just been published by Battelle Memorial Institute, Columbus, Ohio.

Founded to advance education, science, and industry through research and through the dissemination of technological information, Battelle has published widely in the nation's technical and scientific journals. The new catalogue lists more than eight-hundred such journal contributions, books, and patents between 1929-1944, inclusive.

The catalogue includes subjects in the fields of organic chemistry, electrochemistry, chemical engineering, graphic arts, welding technology, applied mechanics, mineral dressing, industrial physics, ceramics, fuels, and metallurgy.

United Gas Sales Up

NATURAL gas sales by the United Gas System reached an all-time high of over 380 billion cubic feet in 1944, according to the company's annual report. Revenues from the sale of gas increased 10% to reach $45,933,470.

Increased population and wartime economic conditions prevailing in the territory served by the United System contributed to an increase of $1,331,658 in revenues from the distribution and sale of gas at retail. Revenues from the sale of gas at wholesale to distribution systems and pipeline companies of other ownership increased $537,690 over 1943. Revenues from the sale of gas to the System's pipeline industrial customers increased $968,270. Sales to Army and Navy Camps and Bases and two synthetic rubber plants increased $1,336,001.

The production and sale of natural gasoline and other liquid hydrocarbons paralleled the increase in the production and purchase of natural gas. Likewise, the average price received for those products in 1944 was slightly higher than their average price per gallon in 1943.

Revenues from the extraction and sale of natural gasoline by United Gas Pipe Line Company amounted to $1,227,834. Union Producing Company's revenues from cycling operations and drip gasoline recovery amounting to $2,017,716 were included in miscellaneous natural gas operating revenues which increased $510,490 in 1944 over 1943.

ALL-GAS HOUSE—A HAPPY CHOICE!

June 9, 1945

American Gas Association,
420 Lexington Avenue,
New York 17, N. Y.

Dear Sirs:

We have greatly enjoyed the recent advertisements of the American Gas Association in the better magazines.

For fifteen years we have had an all-gas house, and it is priceless—especially with coal and oil shortages. An all gas house is no idle postwar dream; it really works, and so immaculately and efficiently, with such reasonable up-keep.

My husband is an executive of a large company selling both electricity and gas. When we built, fifteen years ago, they sold impartially both electric and gas appliances.

We had a splendid opportunity to examine them, test them out, and get the inside stories of their respective merits.

Our colonial home is entirely decorated with light paints and paper. Naturally, we desired the cleanest appliances and heat, to save on upkeep. Our all-gas house has been a very happy choice. All of our original appliances—the gas house heater, the gas hot water heater, the gas refrigerator, and the gas stove are still attractive and efficient servants—save the stove. We succumbed to a modern number just a few days before Pearl Harbor. We couldn't resist a "stream-liner" of the latest type, although our original cooked perfectly.

Although it is fifteen years old, our house is still attractive. It has been used in a national magazine—about ten years ago. It was very advanced at the time it was built. We have one of the few colored gas refrigerators, a jade green, which matches our cupboards. The walls are pale gray-green; the draw drapes cedar-rose, with the linoleum a few shades deeper, and a gayly papered nook. The refrigerator still looks new and modern, and is as silent as a thought.

I feel that an all-gas house has given me time for hobbies—photography, gardening, and flower arrangement.

Naturally, the sale of gas is right up our alley. More power to it! We feel that only now are the gas ads beginning to make themselves felt in the world. We were constantly meeting educated people who had never even heard of a gas refrigerator.

Very truly yours,

Mrs. E. M. G.

New Edition of Heating Guide

THE 23rd edition of the Heating, Ventilating, Air Conditioning Guide published by the American Society of Heating and Ventilating Engineers, 51 Madison Avenue, New York 10, N. Y., is now available. A 15-page detailed index, a single-page, quick-reference table of contents, and a brief summary of chapter contents under each chapter heading provide easy reference to the subjects treated in the book.

The guide contains 48 chapters of technical data and information grouped under the general sub-divisions: Principles; Heating and Cooling Load Calculations; Combustion and Consumption of Fuels; Steam and Hot Water Heating; Air Heating, Cooling and Conditioning; Automatic Controls, Instruments and Motors; Special Applications and Miscellaneous.

The chapter on panel heating and radiant heating has been completely rewritten so that the first part deals with the influence of radiant heat upon the occupant and the latter part presents a new method for practical calculations of a panel heating system. An illustrative problem indicates simplifying assumptions which may be used to reduce the work required to design a satisfactory system.

Selection of chimneys for gas appliances will be facilitated by the chimney selection chart added to the chapter on chimneys. In bringing the chapter on automatic fuel-burning equipment up-to-date reference was made to the recently adopted codes for rating stokers.

The chapter on heating boilers has been revised to include present accepted rating practice and includes clarified definitions of the various terms referring to heating load.

New data on high pressure steam systems have been added to the chapter which now includes steam heating systems and piping, rearranged to facilitate reference to various systems.

Heat transmission data in the chapter on pipe insulation have been revised to agree with accepted values for present typical insulating materials.

The 1945 edition was compiled by 47 members of the society and other engineers working under the supervision of the Guide Publication Committee.

In a total of 1216 pages the 23rd edition of the guide contains 808 pages of technical data; 344 pages of equipment data, and the roll of membership of the society. The book retains its familiar size (6 x 9) and external appearance and is bound in a blue cover stamped in gold and is available at $5 per copy.

Gas Appliance Manufacturer Wins "E" Award

THE Empire Stove Company, Belleville, Ill., peacetime manufacturer of gas cooking and heating appliances, has received the Army-Navy "E" award for conspicuous effort on the war production front. Col. Lowell A. Elliott, deputy chief, Chemical Warfare Service, Washington, D. C., presented the "E" flag to Edward Kaufman, Empire president, at a recent ceremony.

In making the presentation Colonel Elliott stated, "This award is being made specifically for outstanding achievements in the design and manufacture of airplane smoke tanks and for the rapidity with which the company converted to the production of incendiary bomb cluster adapters for use against Japan."

Colonel Elliott also related specific instances where the items manufactured by Empire Stove Company had been used to defeat the enemy by laying protective smoke screens to cover landing operations of our troops in the Pacific as well as on the beaches at Normandy during the invasion of Europe.

The ultimate in atmospheric comfort throughout the year, long desired in the American home, will be provided by all-year gas air conditioning. Although production on a large scale awaits the reconversion period, several hundreds of these units already are in operation in homes.

Col. Lowell A. Elliott, deputy chief, Chemical Warfare Service, Washington, D. C. (left) presenting the Army-Navy "E" flag to Edward Kaufman, president, Empire Stove Company. In the center is L. A. Brand, Empire vice-president

Bryant Offers "Town of Tomorrow"

A 42-PAGE spiral-bound brochure entitled "Town of Tomorrow," recently published by the Bryant Heater Company, reviews widely the many styles of present-day architecture in America to which gas home heating is adaptable.

No gaze into a crystal ball or imaginative air brush portrayal, "Town of Tomorrow" does not attempt to picture a postwar dream world. Rather it shows what is available for, and what may be expected of, residential building in the not too distant future. By selecting outstanding examples of modern construction in many home styles, large and small, the brochure assembles a representative collection of up-to-date American architecture from every geographical area.

The homes pictured have one quality in common; all of them feature the clean, convenient economy of automatic gas heating and the extra space advantages resulting from these compact installations. Floor plans are included with each design, and in many instances, exterior views of the house are accompanied by photographs of interior details of unusual charm or interest. A page on basement design and a description of insulation methods are the only technical portions of the book. A pictorial summary of Bryant home heating equipment, with a brief description of each unit, completes the brochure, which also lists Bryant distributors in principal cities.

Gas Measurement Report Reprinted

THE Gas Measurement Committee Report No. 2, published by the Natural Gas Department of the American Gas Association, has been reprinted 8½" x 11" size with revisions and corrections. This valuable report includes recommendations covering the use of certain types of orifice meters in the measurement of natural gas.

It may be obtained at $1.50 per copy from the American Gas Association, 420 Lexington Ave., New York 17, N. Y.

Helium Gas Inflates Tires

HELIUM, the exclusively American balloon gas, can be used economically to inflate the huge tires of passenger airliners, it has been found by engineers of the Consolidated Vultee Aircraft Corporation, in San Diego, Calif. Use of this gas instead of air saves weight and permits an increased payload.

Air required to fill the tires would weigh 180 pounds, as compared with 26 pounds for helium. Tests have proved that the puncture-proof tubes will hold the lighter helium gas at the required pressure. An ample supply of helium is available, as the government is now producing more than needed in balloons and dirigibles, and is releasing some for other uses.

Minerals Yearbook Now Available

ACTING under revised security regulations of the Bureau of the Budget, Dr. R. R. Sayers, Director of the Bureau of Mines, announced on May 2 that the previously confidential *1942 Minerals Yearbook* is now available for public distribution. This was followed on June 4 with a similar announcement regarding the 1943 volume. Previously, 1942 and 1943 natural gas statistics of the Bureau were available only in brief mimeographed Mineral Market Reports and, more recently, in the form of *Yearbook* natural gas chapter preprints.

The availability of this information in book form is called to the attention of member companies in view of the limited supply. Orders should be addressed to the Superintendent of Documents, Government Printing Office, Washington 25, D. C. The 1943 volume is priced at $2.50, the 1942 volume at $2.25.

Natural Gas Reserves

DISCUSSING an eight-month study made for E. Holley Poe and Associates, E. DeGolyer, nationally recognized geologist, told the Senate Special Committee to Investigate Petroleum Resources in June that "as of the first of this year the United States has a proved gas reserve in excess of 140 trillion cubic feet" exclusive of those fields having individual reserves of less than 20 billion cubic feet. The largest reserves, he stated, are in Texas, 82 trillion; Louisiana, 17 trillion; California, 12.9 trillion; Kansas, 10.9 trillion; and Oklahoma, 6 trillion.

WPB Gives Go-Ahead To Construction

THE War Production Board relaxed its controls June 2 to permit utilities to proceed with long-deferred plans to expand their systems and begin the large volume of maintenance and reconstruction work accumulated during the imposition of wartime limitations.

The action, taken through amendment of Utilities Order U-1, virtually revokes all controls on the installation of facilities by electric, gas, water and communications utilities.

Pointing out that utilities have been operating for almost four years on a "bare bones" policy in regard to expansion, Edward Falck, director of WPB's Office of War Utilities, declared that immediate relaxation was essential to assure "that utilities will be in a healthy condition to service industry and civilians after the war."

According to WPB, the new policy will permit utilities to make any addition to plants on an unrated basis, without obtaining prior authorization from Washington, with the exception of construction of new buildings whose cost in materials would be in excess of $25,000. Building projects costing less than $25,000 are permitted without authorization.

Mr. Falck estimated the outlay by utilities in 1946 at $1,630,000,000, compared with $815,000,000 in 1943 and $787,000,000 in 1944.

Hartford Wins National Security Award

THE Hartford Gas Company, Hartford, Conn. has received a National Security Award, given by the National Office of Civilian Defense, in recognition of a "superior standard of protection and security." The presentation was made on June 28.

"Your company was tremendously forsighted, beginning defense planning prior to Pearl Harbor, and you developed a defense organization during the first part of the war of which you and Hartford can be most proud," said Mayor Mortensen in presenting the award to Norman B. Bertolette, president of the company.

Mr. Bertolette, accepting the award said: "We of the Hartford Gas Company feel proud that we were able to do this job on behalf of the city of Hartford. Our first thought during those early days was to draw up plans to maintain or if necessary, restore as speedily as possible, our service to the community."

He expressed appreciation for the cooperation of the Hartford War Council and for the work done by company employees.

Howard R. Carlson, director of the company's volunteer defense corps, and A. B. Hamilton, co-ordinator for its air raid precautions, outlined steps taken to meet the emergency of possible air raids. Other speakers were Thomas G. Fraser, chairman, Hartford War Council, and Charles A. Welch, chief air raid warden of Hartford.

N. B. Bertolette, president of Hartford Gas Co. receiving the National Security Award from Mayor Mortensen. Thomas G. Fraser, chairman of the Hartford War Council, is shown in the center

West Coast Market For Gas Appliances

RECENT advertisements of the Pacific Coast Gas Association point out that the West Coast offers a large and fertile postwar market for gas appliances. "Just before the war," the copy states, "gas ranges in the Pacific West were being replaced at the rate of 7 per cent, or 140,000 units annually. Production practically ceased three years ago, and authorized manufacturing during the war has been but a 'drop in the bucket.' The dammed-up replacement demand, by war's end, is conservatively estimated at one-half million gas ranges.

"Remember, too, that the population of the West Coast has increased by an estimated 2,000,000, of which a large percentage is expected to remain after the war, and that obsolete or temporary housing must give way to thousands of new dwelling units. Finally, consider that Pacific Coast people hold not less than six billion dollars in savings and Series E War Bonds. It all adds up to a whopping big opportunity for gas appliance dealers who prepare now for a real *selling* job."

Bureau of Mines Reports on Coal Research

GREATER production of high-quality coal and coke to meet unprecedented military and civilian requirements and the conservation of fuel resources through more efficient utilization of fuels were primary objectives in the many-sided coal research program carried on last year by the Bureau of Mines, according to a report released June 20 by Dr. R. R. Sayers, director of the Bureau.

Accomplishments of Bureau engineers and scientists in coal inspection and analysis, mining and exploration, gas-and-dust explosions research, coal preparation and storage, and fuel efficiency are reviewed in the report entitled "Annual Report of Research and Technologic Work on Coal for the Fiscal Year 1944," which has been issued as a Bureau of Mines information circular.

Prepared under the direction of Dr. A. C. Fieldner, chief of the Bureau's Fuels and Explosives Service, the report also describes coke research work and outlines developments in the recently-inaugurated synthetic liquid fuels program.

To help meet mounting industrial requirements for better-grade metallurgical coke, Bureau of Mines engineers conducted a critical survey of the entire beehive coke industry and provided operators with technical information required for the production of this vitally needed fuel. As further aid in maintaining adequate reserves of coking coals, tests were conducted on the carbonizing, expanding and storage properties of coal from newly developed fields.

New A. G. A. Members

GAS COMPANY

Corporacion de Fomento de la Produccion, Chile (F. W. Jung)*

MANUFACTURER COMPANIES

Cleveland Range Company, Cleveland, Ohio (K. L. Seelbach)
Columbia Malleable Castings Corp., Providence, R. I. (Thomas R. Horan)
The Coroaire Heater Corp., Cleveland, Ohio (A. W. Conley)
W. C. Holmes & Co., Ltd., Ruddersfield, England (P. Rembrook)
Jackson & Church Co., Saginaw, Michigan (A. L. Swartzmiller)
L. O. Koven & Brother, Inc., Jersey City, N. J. (A. R. Hanson)
Pittsburgh Plate Glass Co., Pittsburgh, Pa. (J. G. Frantz)
Shur Bros. Co., Cleveland, Ohio (Al Shur)
Syncromatic Corp., Milwaukee, Wisconsin (R. C. Jaye)
The Vendo Co., Kansas City, Missouri (F. N. Pierson)
The Wellman Engineering Co., Cleveland, Ohio (A. E. Gibson)

INDIVIDUAL MEMBERS

Stanley G. Aberdein, The Gas Light & Coke Co., London, England

Robert D. Arndt, John Falkner Arndt & Co., Inc., Philadelphia, Pa.

H. A. Brandt, Southern California Gas Co., Los Angeles, Calif.

Col. C. M. Croft, The Wandsworth & District Gas Co., Wandsworth, England

Amariah H. Cubberley, Childs Co., New York, N. Y.

O. D. Donnell, The Ohio Oil Co., Findlay, Ohio

Harrison P. Eddy, Jr., Metcalf & Eddy, Boston, Mass.

Luther H. Hoelter, A. O. Smith Corp., Chicago, Illinois

Frederic W. Jung, Corporacion de Fomento de la Produccion (Chile), N. Y., N. Y.

Joseph H. Kerrick, Philadelphia & Reading Coal & Iron Co., Philadelphia, Pa.

Esther L. Knowles, Carnegie Institute of Technology, Pittsburgh, Pa.

James A. B. Lovett, Milwaukee Solvay Coke Co., Milwaukee, Wisconsin

Gene E. Lydick, Equitable Gas Co., Pittsburgh, Pa.

E. C. McGraw, Stone & Webster Service Corp., Boston, Mass.

L. L. Meier, Jas. Graham Manufacturing Co., Newark, Calif.

Reginald A. Phillips, Central Electric & Gas Co., Sioux Falls, South Dakota

Ward C. Shafer, Pacific Gas & Electric Co., San Francisco, Calif.

Arnold H. Smedley, The North Shore Gas Co., Ltd., Sydney, Australia

W. K. Stevenson, Southern California Gas Co., Los Angeles, Calif.

Arnold Sutermeister, The Wellman Engineering Co., New York, N. Y.

E. E. Taylor, Southern California Gas Co., Los Angeles, Calif.

George B. Tyler, Arkansas Louisiana Gas Co., Little Rock, Arkansas

O. F. Van Buren, Southern California Gas Co., Los Angeles, Calif.

Val Viall, Southern California Gas Co., Los Angeles, Calif.

*Names in parentheses are Company Delegates of the American Gas Association.

Williams Oil-O-Matic Merges with Eureka

MERGING of the Williams Oil-O-Matic Heating Corporation and Eureka Vacuum Cleaner Company, approved by the shareholders of both companies on Monday, May 28, has now taken place. Both Oil-O-Matic and Eureka will continue with entirely separate, completely independent sales and merchandising set-ups. Product trademarks, too, will be carried as before. The Williams Oil-O-Matic Heating Corporation is now known as the Williams Oil-O-Matic Division of the Eureka Vacuum Cleaner Company.

W. A. Matheson, president of the Williams Oil-O-Matic Heating Corporation now becomes a vice president and director of the Eureka Company and manager of the Williams Oil-O-Matic Division. Henry W. Burritt, Eureka president since 1939, becomes president of the merged companies.

Anderberg Resigns

A. N. ANDERBERG, vice-president and secretary of the Superior Water, Light and Power Company, after approximately 48 years of service has announced his retirement as of June 1. F. A. Robbins, engineer, is also retiring from the service of the company. Mr. Robbins has been with the company since 1918, approximately 27 years.

As the result of the retirement of Mr. Anderberg and Mr. Robbins, the following changes have been announced, effective June 1: George A. Corine, formerly general superintendent, vice-president and general superintendent; Edgar L. Smith, formerly treasurer, is secretary and treasurer; Clarence B. Rude, as assistant secretary and assistant treasurer, assumes direct supervision over all accounting; Harvey C. Sargent is engineer and electrical superintendent.

Gardner Appointed Chief of Oil-Shale Division

ANNOUNCING the establishment of an Oil-Shale Mining Division in the Office of Synthetic Liquid Fuels, Dr. R. R. Sayers, director of the Bureau of Mines, said June 12 that E. D. Gardner, former regional engineer in charge of the Bureau's Central Experiment Station at Rolla, Mo., has been appointed chief of the new division.

Charged with the responsibility for all mining activities of the synthetic liquid fuels program as authorized by Congress, the new unit will make engineering and economic studies to develop efficient, low-cost methods of mining the oil shale and possibly the coal to be used in producing synthetic gasoline and oil.

Wilson Leaves Lynchburg Gas

JOHN M. WILSON, vice-president of the Lynchburg Gas Co., Lynchburg, Va., has been elected executive secretary of the Retail Merchants Association there. Mr. Wilson was loaned to the Lynchburg Chamber of Commerce in 1942 to serve as executive secretary during an interim of about a year. He went to Lynchburg from Roanoke in 1937 to join the gas company as sales manager.

Convention Calendar

JULY

24 •A. G. A. E. M. Gas Water Heater Division, Cleveland, Ohio

26-27 •A. G. A.-P. C. G. A. Joint Local Conference on Domestic Gas Research, Los Angeles, Calif.

SEPTEMBER

17-21 •New England Gas Association, Home Service Development Conference, Boston, Mass.

Accounting Section

C. E. PACKMAN, Chairman | E. F. EMBREE, Vice-Chairman | O. W. BREWER, Secretary

Accountants Hold Joint Meeting

BY E. F. EMBREE

General Auditor, New Haven Gas Light Co., New Haven, Conn.

THE usual Spring Conference of the Gas and Electric Accountants having been cancelled this year, due to the existing restrictions on large meetings and conventions, a special meeting of the American Gas Association Accounting Section Management and Advisory Committees and the Edison Electric Institute Accounting Division Executive Committee was held on May 22 in New York in order to hear progress reports on the activities of the various committees and to discuss current and pertinent problems of interest to utility accountants.

Presiding at the morning session, which was devoted entirely to reports from committee chairmen, were C. E. Packman, Middle West Service Company, and E. F. Embree, New Haven Gas Light Company, chairman and vice-chairman respectively of the A. G. A. Accounting Section; H. R. Flanagan, Philadelphia Electric Company, and H. H. Scaff, Ebasco Services, Inc., chairman and vice-chairman respectively of the E. E. I. Accounting Division, and H. C. Hasbrouck, E. E. I. accounting director.

General Accounting Committees

W. D. Virtue, Public Service Company of Colorado, chairman of the A. G. A. General Accounting Committee, speaking also for H. P. Taylor, Wisconsin Public Service Corp., chairman of the corresponding E. E. I. Committee, reported on the activities of five joint subcommittees.

The Subcommittee on Accounting Employee Personnel is reviewing such subjects as re-employment of returning veterans, wage and salary plans, guaranteed annual wages, vacation and sick benefits, and other related personnel topics. The Subcommittee on Uniformity of Accounting Codes is studying and gathering available data on the question of revisions of existing regulatory accounting classifications. The Subcommittee on Simplification of General Accounting Procedure and Machine Accounting Applications is collecting information on outstanding emergency wartime procedures and data on the use of accounting machines. The Subcommittee on Payroll Accounting is assembling data on manual and machine systems and other phases of payroll procedures. The Subcommittee on Pension Accounting is devoting its efforts to covering various types of pension plans, tax regulations as they affect pensions, and the separation of past and future service costs.

A joint meeting of the General Accounting Committees of the A. G. A. and E. E. I. is planned for June, when the reports now being prepared by the various subcommittees will be presented and discussed. Consideration will also be given at this meeting to the possible organization of a subcommittee on Functional Accounting, a subject in which considerable interest has developed as a result of an article published in the March issue of the A. G. A. MONTHLY.

Material and Supplies Committees

T. W. Ayton, Indianapolis Power and Light Company, chairman of the E. E. I. Materials and Supplies Committee, speaking also for O. H. White, Central Illinois Public Service Company, chairman of the corresponding A. G. A. committee, reported that from information summarized from questionnaires, three studies have been completed covering: "Arrangement of Warehouse and Storage Grounds"; "Charging of Minor Items Direct to Plant or Expense Without Clearing Through Inventory"; and "Ordering, Handling, Disposition and Control of Stores Material." A fourth study, "Accounting for and Control of Tools" will be completed at a later date. This group is also working on a brochure "Helpful Hints for Better Storekeeping" a collection of time-saving hints, information on methods and procedure and pictures of labor-saving equipment designed and built by various member companies.

A joint A. G. A.-E. E. I. committee meeting in May was devoted to the presentation and discussion of papers covering "Stores Procedures of Public Utilities from the Viewpoint of the Independent Public Accountant," "Effect of General Accounting Procedures on Stores Accounting," "Materials and Supplies Stock Numbering System," "Stock Control on Railroads," "The War Has Helped Purchasing," "The Purchasing Outlook for Electric Utilities" and "Surplus Property Activities." In addition, the experiences of various companies in Salvage Accounting and Salvage Costs were covered.

Mr. Ayton made special reference to a new plan adopted by his committee in creating an associate member section of individuals in member companies not serving on the regular committee. He stated this plan had provided an opportunity for representatives from smaller companies and from West Coast utilities to enter into the committee work and suggested it be considered by other committees where it may be desired to maintain contacts with member companies not represented on the regular committees.

Taxation Committees

Frank Freer, Jr., Public Service Electric and Gas Company, chairman of the A. G. A. Taxation Committee, speaking also for R. M. Dodds, Ebasco Services, Inc., chairman of the corresponding E. E. I. committee, stated that the meetings of both committees during the year were in the nature of round-table discussions of current tax problems. The following list of subjects were discussed at these meetings:

- Possible influence of original cost studies and 100.5 write-offs on base for depreciation.
- The allowance of additional depreciation for new plant investment in order to encourage postwar employment.
- The deduction of retirement losses and dismantling expenses.
- The amortization of flood rights or the amortization of a hydro plant over the life of a federal license under which it is operated.
- Study of maintenance as prescribed by the Uniform System of Accounts as compared to maintenance recognized by the Bureau of Internal Revenue.
- Income from retirement of bonds resulting from unamortized premium paid on issuance of bonds for excess profits tax purposes.
- Treatment in consolidated income and excess profits tax returns of carry-overs and carry-backs.
- Accumulated earnings and profits.
- Adjustments to base period income under Code Section 711(b)(1) for casualty, demolition, and similar losses, payment of judgments, and abnormal deductions.
- Relief provisions of Section 722.
- Code Sections 760 and 761.
- Records to be maintained for emergency facilities which are amortizable under the Code.
- National Association of Railroad and Utilities Commissioners' report on excess profits tax.
- Actual data submitted in tax returns.

Several of the above subjects were prepared in report form. In addition, the A. G. A. Taxation Accounting Committee prepared a report on "Income and Excess Profits Tax Accruals" which was published in the May issue of the A. G. A. MONTHLY.

Property Records Committees

C. A. Locke, Kings County Lighting Company, Chairman of the A. G. A. Property Records Committee, speaking also for A. V. Schwartz of the corresponding E. E. I. committee, stated that the work of the committees had so far been carried on by correspondence and conferences. He reported that most property record systems were designed to fit the needs of the individual companies and that there were too many refinements in building up property records. Many of the committee members are greatly interested in a comparison of systems with a view towards streamlining and simplication. It appears that an exchange of ideas would prove profitable and it is planned to hold a meeting of the committees in June to prepare a report which should be of interest and value.

Depreciation Accounting Committee

H. H. Scaff, vice-chairman of the E. E. I. Depreciation Committee, reporting in the absence of Chairman F. B. Flahive, Columbia Gas and Electric Corporation, stated that although the A. G. A. had decided to discontinue its corresponding committee, the E. E. I. members felt there should be an available committee to cope with any technical depreciation problems that might arise. The only activity engaged in was a meeting called by Mr. Flahive in response to a request from the board of directors for data on the 1944 report of the Depreciation Committee of the National Association of Railroad and Utilities Commissioners and this data will be given to the Board by Mr. Flahive at their next meeting.

Application of Accounting Principles Committee

R. P. Kaesshaefer, American Water Works and Electric Company, chairman, reporting on the activities of this new committee set up within the E. E. I. during the past year as a result of the great increase in the number of pronouncements on accounting principles by independent accountants and regulatory bodies, stated that the scope of its activities would be:

"To keep informed of the development of accounting principles, conventions and practices in the accounting profession, with special reference to their application to the accounting requirements of the electric utility industry;

"To promote understanding and unanimity of opinion within the industry regarding the application of these developments;

"To serve as the point of reference when opinion is desired regarding the application to the electric utility industry of accounting changes proposed in bulletins of the professional accounting organizations, rulings of regulatory authorities, or other sources."

Contact has been made with the American Institute of Accountants and the Securities and Exchange Commission. The committee has held one meeting and has circulated among the committee members the first draft of comment, addressed to Mr. Werntz, chief accountant of the S.E.C., on a proposed amendment dealing principally with some highly controversial problems concerning the method in which non-recurring or extraordinary items should be shown in financial statements, with especial reference to income and excess profits tax adjustments, the same subject matter being also covered by Accounting Research Bulletin No. 23 issued by the Committee on Accounting Procedure of the American Institute of Accountants in December 1944.

Customer Activities Committees

W. A. Kelly, Consolidated Gas, Electric Light and Power Company of Baltimore, chairman of the E. E. I. Customer Activities Committee, stated his committee had held three meetings with the A. G. A. Customer Activities Group Committees, and that joint subcommittees were working on several reports covering customer accounting, customer collection and customer relations subjects.

J. H. W. Roper, Washington Gas Light Company, chairman of the A. G. A. Customer Accounting Committee, stated that the subcommittees on customer accounting subjects were preparing three reports. One report will cover the new developments in office machines both as to the improvements in existing equipment and description of new equipment. Although there is a great deal of equipment which is still in the experimental stage, there is however some interesting data on machine developments available at this time. Another report deals with a general outline of the unit and stations plans of customer accounting with a summarization of the advantages and disadvantages of each plan. The third report will cover the coupon plan of bookkeeping for merchandise installment sales and the committee is hopeful that this report can also outline some new plan of merchandise accounting.

C. E. Rowe, Consumers Power Company, chairman of the A. G. A. Customer Collection Committee, stated the subcommittees working on collection subjects were preparing two reports. One report deals with a practical credit and collection plan to be used as a reference by credit and collection men in comparing their own practices, or when changes are contemplated, and will also include some valuable data gathered from a survey questionnaire covering credit and collection policies, practices and results throughout the industry. The other report deals with the subject of uncollectible bill losses as developed from a survey in which twenty-three companies participated, covers both the gross and net uncollectible expenses per customer of these companies over a five-year period and also includes information on methods and practices used to effect recoveries of bills previously charged off.

J. Gordon Ross, Rochester Gas & Electric Corporation, chairman of the A. G. A. Customer Relations Committee, stated the subcommittee dealing with customer relations subjects were preparing two reports. The first report covers an employee opinion poll to determine what policies and practices made good customer relations and which ones created unfavorable customer reaction, will outline certain practices and policies that customers like and others that are disliked, and will set down some thoughts which will help improve customer relations. The second report deals with credit policies from a customer relations angle and was published in the June issue of the A. G. A. MONTHLY.

L. A. Mayo, Connecticut Light and Power Company, chairman, reported that a special A. G. A.-E. E. I. committee was started in 1944 to study customer activities and procedures, the main objective being to develop out of all existing practices, better ways of serving customers, better administrative control and a reduction in customer activities expense. A questionnaire covering personnel statistics, expense statistics, sales, revenue and rate data, meter reading and cash receipt practices, applications and orders, credit and collections, billing and bookkeeping and basic customer accounting records has been prepared and was recently sent to approximately 100 companies. The committee has already received several replies and will shortly begin compiling information from the return questionnaires.

The morning session adjourned for a group luncheon after an expression of appreciation to the committee chairmen and committee members for their splendid work on the various reports which will be ready for publication at an early date.

Luncheon Session

At the luncheon, Mr. Flanegan introduced H. C. Hasbrouck, recently appointed accounting director of the Institute, saying Mr. Hasbrouck would in turn introduce the guest speaker for the luncheon since he was a friend and neighbor of Mr. Hasbrouck and had consented to speak to the accountants at the latter's request. Mr. Hasbrouck briefly acknowledged his own introduction, expressing his pleasure at working not only with but for his old friends among the utility accountants and said that since their accounting problems were largely identical he would be serving the gas utility accountants in only less degree than those of the electric light and power industry. He hoped he would be able to make the contribution of the accountants to the success of the industry even more effective in the future than in the past. The guest speaker was then introduced as Lawrence A. Appley, vice-president in charge of personnel planning and research of the Vick Chemical Company. During about three years between 1941 and 1944 while on leave of absence for civilian war service, he was, first, consultant to the secretary of War on civilian personnel; later, director of the Placement Bureau of the War Manpower Commission; and, finally, executive director of the War Manpower Commission, reporting directly to Mr. McNutt.

Management and the White Collar Worker

Mr. Appley spoke on "Management and The White Collar Worker," a subject which is engaging an increasing amount of attention of accounting—and other—executives, in a clear and forceful presentation which

held the rapt attention of his audience. He made a plea for more energetic and intelligent interest by management in the situation which presently confronts the office worker, and for sympathetic efforts to improve that situation.

Mr. Appley said that, generally speaking, the office worker likes his job better than the production worker. He finds it more interesting than assembly line work and feels he is closer to management and has more chance than the factory worker to move into the executive class. Today, however, he is under conflicting pressures. He is told by politicians that he can get everything he wants and more if he will vote the party line. He is told by the leaders of organized labor that the union is the one agency that can help him. And he is told by management, but not effectively enough, that his employers are even more anxious to improve his earning capacity. These three pressures are operating with unusual vigor now because of the squeeze in which the office worker finds himself between salary restrictions, stabilization and the increasing difficulty of maintaining, to say nothing of improving, his standard of living under the impact of rising taxation and living costs. Management should appreciate this and make energetic efforts to find ways to give justifiable salary increases. Too many executives have been satisfied just to say to their office staff—"Sorry, we should like to pay you more, but the government won't let us."

Cash Compensation Factor

However, while cash compensation or the lack of it is an immediate cause of the office worker's present unrest and of such tendency as exists toward organization as the best if not the only way to get what such a worker feels he is entitled to, it is by no means the only thing management needs to think about in its relations with subordinate office workers. Mr. Appley mentioned, with illustrations, at least six points that management ought to consider as part of its responsibility toward its "white collar workers" and as a part of its duty to maintain an effective organization.

First, he said, every job should be well defined and clearly described so each worker should know precisely the limits of his responsibility. Second, there should be definite standards of performance for each job. Third, at reasonably frequent intervals there should be a review of each worker's attainments and an interview between him and his superior, at which his performance should be compared in detail with established standards and efforts made to correct his weaknesses and increase his successes. Fourth, management should be constantly studying how jobs can be better done and pass on to the worker the results of such studies. Fifth, management should make up its mind how to tell the worker the things he should know, and sixth, when to tell him.

As far as pay is concerned, management should not be content to accept standards which are so low that the worker can be induced to take a job with another employer. It is an absurd but increasingly disturbing result of governmental wage and salary controls that while it is extremly difficult for an employer to recognize improved efficiency by higher pay to his own staff, it is relatively easy for a new employer to do exactly that for the same individual.

Mr. Appley urged that management should not accept too readily adverse decisions by governmental agencies on proposed promotions, but should continue to fight for them when they are justified, going back again and again with new facts and arguments. Very often, he said, a re-statement of the case with a little change in emphasis or a further bit of evidence will succeed after two or three failures.

Panel Discussion

The afternoon session, presided over by L. E. Reynolds, The Connecticut Light and Power Company, coordinator of the A. G. A. General Activities Group, was devoted to a panel discussion of four pertinent and timely subjects of paramount interest and importance today to utility accountants. Each subject was introduced by a member of the panel who then answered questions from the floor. The panel members were:

A. G. Mitchell, Philadelphia Electric Co.
D. H. Mitchell, Northern Indiana Public Service Co.
O. H. Ritenour, Washington Gas Light Co.
B. S. Rodey, Jr., Consolidated Edison Co. of N. Y., Inc.
H. H. Scaff, Ebasco Services, Inc.
R. B. Tulpin, Central Illinois Public Service Co.
E. F. Embree, New Haven Gas Light Co.

On the subject of "The Organization of White Collar Workers," the discussion covered such points as job classifications with pay ranges and the publicizing of these classifications, working conditions, comparable compensation, personnel programs, proper training and supervision of employees and the definite responsibility of management toward its white collar workers. There was also some discussion on the relations between management and supervisory employees. Many references were made to the talk given by Mr. Appley at the luncheon session and general agreement was expressed with his opinions.

Discussion of the subject "Postwar Extension of Wartime Accounting Techniques" centered principally on emergency customer activities, practices and procedures which, because of their nature and the greater number of employees involved, had undergone the greatest change, more particularly in the extension of monthly reading periods to bi-monthly or quarterly schedules and the changing of billing practices to conform thereto. Although the majority of companies had adopted bi-monthly reading periods, the retention of the prewar policy of monthly billings by the use of estimated or budget bills in the non-reading months had the greater acceptance. The adoption of multi-monthly billing and reading plans has resulted mainly from manpower problems and customers in general have accepted them as emergency practices but it is generally agreed that easing of manpower shortages by returning servicemen and the postwar thinking of customers when conditions are again normal will to a major degree affect the extension of these particular wartime routines into the postwar period. The effect of the present good times on collection practices and results and the question of credit and collection policies in the postwar period were also discussed.

In the discussion of the subject of "Rate and Cost Yardsticks," reference was made to certain Federal Power Commission publications and releases, as well as to speeches given by F.P.C. members, where unfair comparisons of costs and rates as between public and privately-owned utilities are given and it was felt that the utility industry should make a definite effort to see that these comparisons give due recognition to such variables as investment costs, size of companies, volume of consumption per customer and other factors that have a very definite bearing on rates and costs. The opinion was advanced that the utility industry should definitely acquaint the public and the state regulatory bodies with the inherent weakness of yardsticks, particularly when applied to situations where variable factors do not provide a true comparison.

The discussion of the subject "Depreciated Original Cost as a Basis for Rates" covered many points. It was stated that a review of regulatory standards prescribed by law shows that some regulatory bodies are required to consider fair value as a basis of rate making, and others are required to give consideration to reproduction costs, while in many states the law does not seem to prescribe any definite standard, so that it appears that there is not a widespread acceptance of the depreciated original cost formula. It was further stated that recognition in many cases has been given to acquisition costs, either in the rate base or in operating costs through amortization of the acquisition adjustment account. Reference was also made to the fact that in 1944 the N.A.R.U.C. had not adopted the report of its Depreciation Committee in which use of the straight-line depreciation reserve requirement in rate making standards was recommended.

After a vote of thanks to the chairman and panel leaders for a very interesting afternoon, the afternoon session was adjourned.

Re-elected Treasurer

THOMAS S. LEVER, JR., vice-president of the Philadelphia Gas Works Co., has been re-elected treasurer of the Philadelphia Control of the Controllers Institute of America for the fiscal year 1945-46.

Winter-Summer Water Heating from Gas-Fired Boilers

BY GEBHARD C. BECK

Gas Utilization Engineer, The Brooklyn Union Gas Co., Brooklyn, N. Y.

Gebhard C. Beck

OUR experience with coils in gas-fired boilers for the supply of domestic hot water began in 1936. At that time competitive fuels were highly successful in merchandising a single appliance to supply both space heating and domestic hot water all year 'round.

Our investigations soon convinced us that we had perhaps "missed a bet" in not having similar gas appliances to offer to a public already sold on this method of water heating.

Equipment of this type offered certain advantages, among which are:

1. Single unit, one less to service, purchase, warehouse, deliver.
2. Lower initial investment cost. Less space in cellar.
3. It would eliminate yearly start-ups and shut-downs of heating plant.
4. Increase life of boiler since all-year operation eliminated the deterioration due to summer lay-over on sections and controls.
5. Reduce maintenance because of same reason.
6. Would give us equipment to meet public desire.

Its apparent disadvantages were:

1. Higher consumption during summer months when compared to gas-fired storage water heater.
2. Every care must be taken to insure that equipment is installed as specified, otherwise excessive summer bills and overheated basements might result.

In the spring of 1937, we tried an experimental externally connected instantaneous coil in the home of an employee. We soon learned that insulation is a very important factor in reducing standby loss. It represents the most important factor in summer operating costs.

We were fortunate in having information from this experimental unit and also information obtained from competitive sources on this subject, because we soon were confronted with a number of customers who had purchased from other agencies boiler units incorporating instantaneous coils. This they did in spite of proposals of separate gas-fired boilers and water heaters by our Sales Division. We, of course, watched these installations carefully. The information gained enabled us to convince many "die-hards" that coil water heating had a place in our sales effort.

We now have approximately 700 installations. A neighboring company, The Brooklyn Borough Gas Company, has approximately 350.

There are four principal types of installations on steam and hot water boilers. They are: (See Figure 1)

1. External Slow-recovery Coil with Storage Tank.
2. External Tankless Instantaneous Coil.
3. Built-in Slow-recovery Coil with Storage Tank.
4. Built-in Tankless Instantaneous Coil.

Operating costs are highest for method one and lowest for method four.

We do not find it advisable from an investment cost standpoint to install external coils on existing boilers in one-family homes. The cost of the coils and labor will approximate that of a separate gas-fired water heater. However, in multi-family homes (3-family and over) and commercial establishments (served under Non-Residential General Rate and Non-Residential Heating Rate) where existing boilers are in good condition, such an installation may be justified from a rate standpoint. Under our commercial space heating rate, coil operation is permissible at a lower unit gas cost than would be obtained by a separate gas water heater under the general commercial gas rate. The saving may amount to as much as 33-1/3%. This saving is credited to the (non-residential) rate

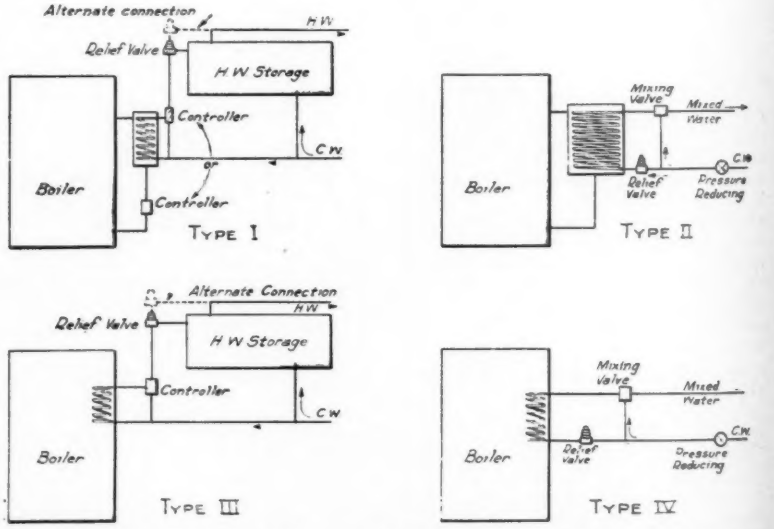


Figure 1. Typical coil installations. (Note—Manufacturers' specifications to be observed)

Presented before Metropolitan Gas Heating and Air Conditioning Council, New York, N. Y., May 16, 1945.

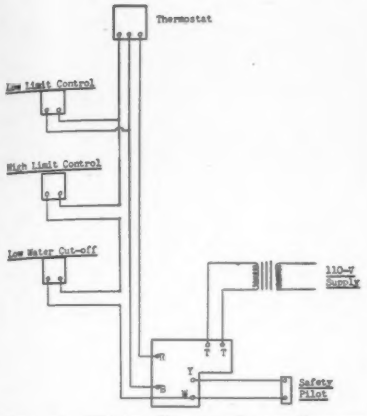


Figure 2. Wiring diagram of control system for a steam boiler with instantaneous (tankless) or slow recovery (tank) coils

structure and not to the method of water heating. It does not apply to domestic house-heating, as these customers are served under the residential rate which gets down to the low rate of 5 cents per thousand cubic feet very quickly.

When sizing the boiler, in our opinion, no additional radiation need be added for instantaneous coils. Many engineers will not agree with this. It is our belief that at the time of the morning heating-up period, the thermostat will have been satisfied before any hot water is drawn. Practice has supported this contention. On the other hand, we do believe 50 square feet of C. I. radiation per bath or one square foot per gallon storage tank, whichever is the larger, should be added for slow recovery coils.

Large Capacity Boilers Best

We have found boilers with large water capacity to give the best results. This capacity should be 25-30 gallons for one-family houses.

When connecting coils externally to existing boilers, be certain that coil manufacturers' specifications are followed. On sectional boilers, every section must be drilled and tapped for a common header to the coil. This is exacting work and the expense involved may be high. We have found that in order to get sufficient circulation head on instantaneous coil connections, it is often necessary to install the coil above the water line of the boiler. This adds to the difficulty of the job since on steam installations, piping must be air-tight, otherwise the vacuum will be broken and no boiler water will remain above boiler water level. This type of installation, while rare, has been advertised recently. With built-in coils these difficulties do not exist.

The boiler should be well insulated. It will be shown later that this factor is perhaps *the most important* feature of these units, so that operating costs may be low. Another important help in cutting down standby loss is control of cold air movement through boiler during burner-off period.

Mixing valves are standard requirement with us. We have had fairly good experience with Taco, Watts and Dole valves. Where we have encountered hand valves (and this seems to be the practice in building developments), we have strongly urged and sold mixing valves to replace the hand valves. We also include a mixing valve in the sale of conversion burner equipment to builders. Where hand valves were replaced by mixing valves, the results amply justified the cost. Mixing valves reduce water wastage, cut hot water costs and prevent scalding. Hand valves require adjustment periodically to compensate for pressure and temperature variations. Experience shows the average home owner will not do this. On slow recovery coils, a temperature controller should be installed in the circulation line to the storage tank (See Figure 1).

Amount of Coil Important

The amount of coil length in instantaneous coils has a marked effect on satisfactory hot water delivery. Sufficient coil length to give twelve square feet of coil surface area should be minimum requirement for one-family homes. We have had some installations with nine square feet of coil surface area, but these have proven uniformly unsatisfactory.

For multi-family houses and commercial establishments, consult your coil catalog or manufacturer's representative.

We have not made a practice of selling hot water coil equipment in hard water areas. A few experimental installations were made, but these have limed up in periods of nine to eighteen months. To complicate matters, the hardness in this particular area has increased from 250 parts to approximately 700 parts per million. There is a deliming service sold at approximately $6.00 to $8.00 per job, depending on conditions found. Some of our customers accept this service as part of the home-operating expenses regardless of the fuel they use.

A domestic hot water pressure relief valve should be installed in the water line to the coil. Where water hammer is encountered, a pressure chamber is desirable.

The boiler water control temperature on steam jobs is maintained by a low limit aquastat usually set 160-180°F.

In forced hot water systems the aquastat is maintained at 170-180°F. Wiring diagrams for all systems should be used only after consultation with your control manufacturers.

Equipment investment cost is lowest on the built-in coil. We are able to and have marketed a boiler with built-in instantaneous coil for approximately $100.00 less than a separate boiler and an individual non-ferrous storage water heater.

Operating Results

In addition to investment costs, operating costs are an important consideration. These differ in the method of water heating when compared to that of the conventional gas-fired storage water heater. The latter operates on a fairly constant monthly consumption rate throughout the year, whereas in the coil method, the summer consumptions are quite high when compared to winter. We have worked out consumptions and costs under various conditions of usage which are shown in Table I. These estimates show that this method of water heating when taken over a yearly period compares favorably with that of two units. It would take many years to overcome the benefit of the $100.00 saving in initial investment cost if the slightly higher operating cost were charged against it. Actual practice has definitely proven our estimates to be quite high. We are certain to reduce these when sales are again resumed.

I would like to discuss at this time results experienced in the field. *Summer Operation*—As stated previously, economy of summer operation is entirely dependent on the effectiveness of the insulation. This we learned on our experimental installation in 1937, when we replaced the conventional ¾" asbestos cement covering on the boiler with 2" Magnesia Block. The monthly gas

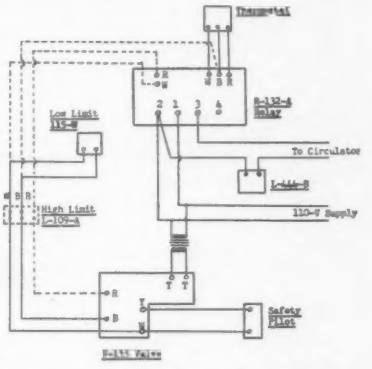


Figure 3. Wiring diagram of control system for a hot water boiler. Solid lines show slow recovery (tank) coil, 150 B.t.u. emission system. Dotted lines indicate additional wiring necessary for slow recovery and instantaneous coils on a high temperature system. Controls supplied with Burnham Simplex boiler are indicated by the type number

rate was reduced from 12,000 to 9,000 cubic feet—a reduction of 25%.

An analysis of summer consumptions made in 1940, on 136 installations, the majority of which were instantaneous coils, show the following on steam installations.

Approx. Billing Period-Year 1940	*Avg. Monthly Cons. in Cu. Ft. (540 Btu)*	
	Cooking Gas Included	*Cooking and Refrigeration Gas Included*
	cu.ft.	*cu.ft.*
June 15–July 15	7,910*	9,440*
July 15–Aug. 15	6,580	9,180
Aug. 15–Sept. 15	6,290	8,540
Sept. 15–Oct. 15	9,850*	10,510*

*In many cases includes some space heating gas.

If we deduct 1,400 cubic feet for cooking and 3,000 for cooking and refrigeration, the

Season	No. of Days	Degree Days	Consumption in M Cu. Ft.		
			Ckg. Refrig. & Wtr. Htg.*	Hse. Htg.	Total
1936–37	179	3,722	45.8	156.8	202.4
			Ckg. & Refrig.	Hse. Htg. & Wtr. Htg.†	Total
1937–38	181	3,777	24.0	175.4	199.4

*Separate Gas Storage Wtr. Htr.
†Instantaneous Coil Attached to Heating Boiler.

net gas chargeable to hot water supply is well below our estimate.

We have only at a later date, that is shortly before Pearl Harbor, installed instantaneous coils in forced hot water systems. We have heretofore preferred slow recovery on this type of boiler. Consumption figures available closely follow those for instantaneous coils.

Winter Data: It is virtually impossible to segregate hot water costs and space heating costs on winter operation. We have arrived at an assumption by deducting standby losses on a number of draw tests in the laboratory. On this basis we were able to formulate a figure of 3,000 cubic feet per month on a 50-gallon daily draw. We are certain that this exceeds that obtained in actual practice. In the case of the experimental boiler mentioned earlier in this discussion, the above record is self-explanatory and substantiates our estimate.

We have also made studies of consumptions on other installations. In the majority of cases the actual winter consumptions for both hot water supply and space heating were within the space heating estimated consumption.

Experience Verified

This experience is duplicated in the Brooklyn Borough Gas Company territory. Philip Baas, superintendent of customer service, in a paper* presented February 19, 1941, before the Metropolitan Gas Heating and Air Conditioning Council, states: "During winter operation, the efficiency has been so high that 90% of the installations are obtaining hot water and heating for less than they should be obtaining heat alone based on the actual degree days experienced and the required radiation of the houses."

Of summer consumption he has this to say—"On 31 installations having separate meters on the boilers, the average consumption per meter was 6,300 cubic feet of 540 Btu gas per month during last July and August."

In order to be reasonably certain that the equipment we merchandise or approve will operate within our estimates, we have set the following requirements to be met by test.

1. That the hot water delivery be 15 gallons of water during a 5-minute period with a minimum water temperature of 130 degrees F. The initial boiler water temperature to be set at 180 degrees F. and the incoming domestic water temperature to be 60 degrees F.

2. That the standby loss will not exceed 6 cubic feet of 540 Btu gas per hour for a 72-hour period in an average room temperature of 65 degrees F.

These requirements are not difficult to meet. We are not boiler designers and will not presume to dictate how these should be accomplished. The boiler manufacturers' engineers are better fitted to do this. We would suggest, however, that the basic requirements stated before are dependent on factors such as:

1. Size of boiler and its water content.
2. Location of the coil in or on the boiler.
3. Circulation of water in all boiler sections.
4. Type and location of aquastat.
5. Size or surface area of coil.
6. Kind of insulation and how it is put on.
7. Type of mixing valve.
8. Control of air circulation through boiler on burner off periods.

TABLE I

DOMESTIC HOT WATER OPERATING COST ESTIMATES
DAILY WATER DEMAND

	Consumption Per Month	
	Summer (4 mos.)	Winter (8 mos.)
1 Family—50 Gallons per day (families of 3–5 people)	7500 cu. ft.	3000 cu. ft.
1 Family—75 Gallons per day (families of 6 people or more)	9000 cu. ft.	4500 cu. ft.
2 Family—All cases	9000 cu. ft.	4500 cu. ft.

AVERAGE HOT WATER CONSUMPTION AND COST

Estimated Cooking Consumption—1800 cu. ft. a month
Estimated Refrigeration Consumption—1800 cu. ft. a month

Cost per Month—50 Gals. Hot Water a Day

Possible Water Heating Combinations	Summer 4 Months	Winter 8 Months	Avg./Mo. 12 Months
A. House Heating Boiler Coil used both Summer and Winter			
(a) With gas cooking	7500 cf $5.22	3000 cf $2.40	$3.34
(b) With gas cooking and refrigeration	4.63	2.04	2.90
B. House Heating Boiler Coil used Winter only			
Gas Water Heater used Summer only			
(a) With gas cooking	3800 cf 2.96	3000 cf 2.40	2.59
(b) With gas cooking and refrigeration	2.52	2.04	2.20
C. Gas Water Heater used both Summer and Winter			
(a) With gas cooking	3800 cf 2.96	3800 cf 2.96	2.96
(b) With gas cooking and refrigeration	2.52	2.52	2.52

*Cost per Month—75 Gals. Hot Water a Day**

	Summer 4 Months	Winter 8 Months	Avg./Mo. 12 Months
A. House Heating Boiler Coil used both Summer and Winter			
(a) With gas cooking	9000 cf $6.04	4500 cf $3.42	$4.30
(b) With gas cooking and refrigeration	5.38	2.94	3.75
B. House Heating Boiler Coil used Winter only			
Gas Water Heater used Summer only			
(a) With gas cooking	5600 cf 4.08	4500 cf 3.42	3.64
(b) With gas cooking and refrigeration	3.60	2.94	3.16
C. Gas Water Heater used both Summer and Winter			
(a) With gas cooking	5600 cf 4.08	5600 cf 4.08	4.08
(b) With gas cooking and refrigeration	3.60	3.60	3.60

*May be used where hot water supplies two families and other gas utilization by the owner on the premises.

* Published in full in the May, 1941, A. G. A. MONTHLY, pp. 186-189.

Conclusions

After seven years of experience with approximately 700 space heating installations equipped with coils for domestic hot water supply, we find

1. That the operating costs compare favorably with that of the domestic gas storage water heater.
2. The initial investment costs are often lower for the boiler with the built-in coil.
3. That the life expectancy of such equipment is greater than boilers which are shut down each summer.
4. That servicing on the part of the gas company is less and maintenance is reduced.
5. That equipment of this type has a field and place beside the separate boiler unit and storage water heater unit. The heating engineer must weigh all the facts in his survey and select that equipment which best fits his customer's needs. Neither method by itself is the best solution in all cases.
6. That in damp climates, it helps keep cellars dry.
7. That the apparent high summer bills are not a hindrance if carefully explained or if budget billing is used.
8. That it is desirable to have more manufacturers become interested in producing packaged units in order to lessen the added supervision now required in building development projects on equipment bought from many sources.

Sales Managers Hold Round Table

Chairman James J. Deely presenting a desk set to J. P. Hanlan (center) chairman of the first regional sales conference, while Alexander Forward, A. G. A. managing director, looks on with approval

Speakers at New York-New Jersey meeting—Left to right: R. E. Williams, chair., Committee on Selection and Training of Sales Personnel; F. W. Trembly, Jr., Philadelphia; and H. Vinton Potter, New Freedom Kitchen director

SOME 60 sales managers from the New York area heard the news June 29 that gas refrigerators would again be produced starting July 2; that a new manual for architects and builders would be available this fall; that gas-fired laundry driers will open up "the sixth big job"; that national advertising will stress all appliances as well as the New Freedom Gas Kitchen; that single-point ignition will help expand the CP Range market; and that salesman selection and training programs will be available August 1.

This well-balanced program by able speakers was presented at the 1945 New York-New Jersey Sales Managers Round Table Conference, held by the Residential Gas Section of the American Gas Association at the Hotel Pennsylvania, New York City. The executive committee in charge of the meeting was: Chairman James J. Deely, acting new business manager, Brooklyn Union Gas Co.; Mrs. Helen S. Steers, Brooklyn Borough Gas Co.; J. P. Hanlan, Public Service Electric and Gas Co., Newark, N. J.; and W. J. Schmidt, Long Island Lighting Co., Mineola.

"A Key to the New Home Market" by H. P. Morehouse, general heating and air conditioning representative, Public Service, Newark, described in detail the forthcoming "Reference Manual of Modern Gas Service" to be used as a potent sales tool to assure quality appliances in new homes. This manual, for the first time, assembles nationally approved data in standardized form for architects and builders.

C. B. Cole of Springfield, Mass., eastern distributor for the Hamilton Manufacturing Co., Two Rivers, Wis., spoke on "Introducing the Sixth Big Job" and outlined the growing market for automatic gas-fired laundry driers. The Hamilton automatic dryer holds a full tub of clothes from the washer, weighing 18 lbs. wet and 9 lbs. dry. It dries the clothes in 20 minutes for ironing, and 30 minutes "bone dry."

William B. Hewson, publicity and advertising manager, Brooklyn Union, and member of the Copy Committee, A. G. A. National Advertising, showed the steady downward trend in cost of observation and text reading on the three last campaigns in national magazines. He also showed some favorable comparisons with electric appliance manufacturers in recent surveys.

George S. Jones, Jr., vice-president of Servel, Inc., Evansville, Ind., announced officially that production of gas refrigerators would be resumed at the Servel plant July 2. He reviewed the two decades of gas refrigerator history in this country and said "there are 2,000,000 silent voices singing the praise of gas in the home."

Reasons for the success of the gas refrigerator, according to Mr. Jones, are: A good product; unfailing fuel supply; and excellent service by the utilities.

Pointing out that a tremendous market awaits, Mr. Jones urged gas sales executives to step up their activities. He said that about 10 per cent of all American refrigerators in use are gas-operated, and surveys indicate 20 per cent of replacement sale will be gas. He therefore concluded that postwar quotas should be at least 50 per cent higher than prewar.

Just before the round table adjourned for lunch, Chairman Deely presented a luxurious desk set to Mr. Hanlan, who was chairman of the first such sales conference held in 1924 at Millbrook, N. Y. He was first employed in 1891 as a high school student, lighting gas lamps for $12 a month and furnishing his own matches. He has held almost every sales position with Public Service and its predecessor companies in his 52 years of employment there, and has been chairman of the A. G. A. Residential Gas Section, president of the New Jersey Gas Association, and officer of other groups. Mr. Hanlan responded with stories of the early days in gas sales activities.

Convening after lunch, the conference elected J. J. Wholey, Rockland Gas Co., Spring Valley, N. Y., as chairman of the executive committee for the coming year, and the following new members: Mr. Hewson; C. A. Kennedy, New York and Richmond Gas Co., Staten Island, N. Y.; and W. D. Williams, Public Service, Newark.

H. Vinton Potter, director of the A. G. A. New Freedom Gas Kitchen Program, spoke inspiringly on "Halos for Gas Ranges." He said in part:

"Unless we are aggressive and enthusiastic in our sales activities, some one with an inferior product such as electric cooking will win over many of our customers. It is no longer a matter of one appliance versus another; women want complete, modern glamorous kitchens."

Mr. Trembly, assistant sales manager, The Philadelphia Gas Works Co., announced that this company would now promote CP ranges with single-point ignition made by all manufacturers who will establish branch offices or distributors in the Philadelphia area. He believes CP progress was retarded by the limited number of manufacturers in the program and by the complication of multi-point ignition. This company has developed a single-bend Y-type tube that works successfully with manufactured gas, and shows promise of success with natural gas.

R. E. Williams, new business manager, Binghamton Gas Works, and chairman, A. G. A. Committee on Selection and Training of Sales Personnel, warned that "Green Troops Don't Win Battles." He declared the "Battle of the Fuels" will resume soon, and indirect competition for the consumer's dollar will be more intense than ever before.

Mr. Williams described the Residential Salesmanship course of six units, to be available August 1, and the three-unit course in employee indoctrination. The latter three will be available early in August and the sales course early next year.

Home Service Contest Winners Named By Water Heating Committee

Flora G. Dowler

Mary Louise Hurster

Dorothy Zieber

Dorothy L. Bartley

Judith E. O'Flaherty

FLORA G. DOWLER, home service supervisor of the Pittsburgh group of natural gas companies affiliated with the Columbia Gas & Electric Corp., has been awarded first prize of $150 in war bonds for her entry in the home service contest sponsored by the Water Heating Committee of the American Gas Association, C. S. Stackpole, chairman.

Other prizes were awarded as follows: Second prize, $75 war bond Mary Louise Hurster, home service director, The Laclede Gas Light Co., St. Louis, Mo.; third prize, $50 war bond—Dorothy Zieber, home service director, Consumers Gas Co., Reading, Pa.; fourth prize, $25 war bond—Dorothy L. Bartley, home service department, Central Hudson Gas and Electric Co., Poughkeepsie, N. Y.; fifth prize, $25 war bond—Judith E. O'Flaherty, home service department, Philadelphia Electric Co., Philadelphia, Pa. Special awards of $25 war bonds were made to Rita Abbruzzese, supervisory director, Central Hudson Gas and Electric Corp., and Kathryn T. Goodall, supervisory director, Philadelphia Electric Co., because a member of their departments won a regular award.

More than 100 entries from all parts of the United States and Canada were received in the contest which was designed to bring out the best ideas on the theme "What Can Home Service Do to Aggressively Promote Adequate Gas Water Heating Service?"

Accepting the committee's suggestion that a specific idea was desired, Miss Dowler, the first prize winner, conceived a chart and a standardized home service lecture. Both concern the effectiveness of hot water at various temperatures for a variety of uses in home, store and shop. Her contribution is designed primarily for home service classes of food workers and parent-teacher groups.

Miss Dowler went to Pittsburgh in 1940. She achieved national recognition by winning the 1943 McCall Gas Utility Home Service contest. Last year, Miss Dowler was one of the winners in a contest conducted for home service personnel by the Ruud Mfg. Co., of Pittsburgh.

Judges of the A.G.A. contest were Ada Bessie Swann, consultant, Woman's Home Companion, New York; Norman J. Radder, secretary, Plumbing and Heating Industries Bureau, Chicago; and M. M. Scott, advertising department, Ruud Manufacturing Co., Pittsburgh.

The Jury of Awards studying entries in the contest. Left to right: W. D. Williams, Newark, N. J., member, A. G. A. Water Heating Committee; J. R. Lavelle, chairman, Water Heating Division, A.G.A.E.M.; Norman J. Radder, secretary, Plumbing and Heating Industries Bureau, Chicago; Miss Ada Bessie Swann, consultant in advertising, Woman's Home Companion; *F. W. Williams, secretary, Residential Gas Section, A. G. A.*

New England Managers Discuss House Heating

A VERY interesting and instructive Company Managers Conference under the sponsorship of the New England Gas Association was held in Boston on Friday, June 29.

The conference was well attended, and the discussions indicated the interest of the managers present in the timely subjects selected for discussion. President D. S. Reynolds, Boston Consolidated Gas Co., opened the meeting and Chairman Hall M. Henry, Negea Service Corp., presided.

Chairman Henry discussed the application of his house heating study currently being published in the A. G. A. MONTHLY and in *Gas Age*.

E. G. Boyer, Philadelphia Electric Company, decribed the development of the reformed gas process that is used by the company to reform refinery oil gas at Chester, Pennsylvania. Mr. Boyer also discussed the application of this process to LP gases, propane and butane, as well as the use of LP gases for meeting peak loads in outlying territories. W. T. Jebb, Connecticut Light and Power Co., in his discussion of Mr. Boyer's paper summarized the very interesting use of butane for reforming and enriching at Waterbury.

In the afternoon Gordon G. Howie, Cambridge Gas Light Company, and John A. Weiser, Newport Gas Light Company, presented interesting applications of Mr. Henry's general study to their specific properties.

Magic Chef Tie-In With A.G.A. Program

AMERICAN STOVE CO., manufacturers of the Magic Chef gas ranges, has announced to its dealers and utility customers a comprehensive program of tie-in advertising to help them reap maximum benefits from the "New Freedom" gas kitchen promotion of the American Gas Association and from its own national advertising. Tieing in with the A.G.A. national advertising campaign, the company outlines its helps for dealers and utilities in the current issues of its Magic Chef magazine.

This tie-in program consists of newspaper advertising, direct mail advertising and display advertising. Mats or electrotypes of a wide selection of newspaper ads will be supplied dealers and utilities for local use over their own names. These newspaper ads spotlight Magic Chef ranges in "New Freedom" gas kitchens of the type that will be available when various manufacturers resume production.

Nine attractive, work-saving "New Freedom" kitchen arrangements are shown in four colors on the center spread of the piece for dealers' direct mail use.

For display—in windows and on sales floors—the company has prepared enlargements of "New Freedom" gas kitchens which will be supplied dealers in sets of four. Blow-ups of American Stove's national advertisements will also be furnished for such use.

The Future of Commercial Cooking

BY J. W. McNAIR

Vice-President and General Manager, Standard Gas Equipment Corp., Baltimore, Md.

J. W. McNair

AN industry as important as the commercial cooking industry with an annual production of six and one half billion dollars of food products deserves a long and searching look so, first, let's look at some of the amazing possibilities stemming from wartime development.

War has always been an educator. Out of it come many new ideas, new sciences and improved ways of doing things. For example, radar. All of us marvel at the wonder of radar when we read how enemy planes are stopped in their tracks by the aid of modern radar fire controls. We know that submarines were licked by use of marvelous detecting devices, based on the new science of electronics. We've all heard of infra-red rays and how these rays penetrate and heat without giving up any of their heat to the air as they pass through it.

Electronic Experiments

We read of experiments with electrons in food industry. How scientists by bombarding wholewheat and rye flour produce a bread loaf of lightness and texture approaching white bread. How coffee cream exposed to these electrons can be sterilized and stabilized for months without refrigeration. We read how Vitamin A and B content of eggs can be increased by exposure to these same electrons and how a St. Louis brewery made beef steak from molasses, yeast and ammonia which has double the protein value of real beef at only one fifth the cost. That's one recipe I'd like to get.

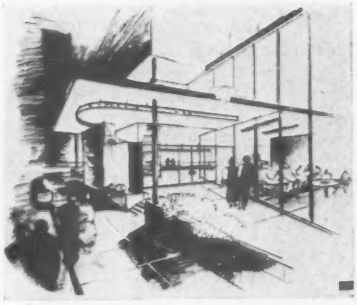
There has been a lot of talk about postwar ovens that will cook roasts in six seconds with electronic tubes. Some such special ovens already proved their worth in drying paint. Experimenters are working now who say they can infra-red a luscious steak, dehydrate fruit and vegetables faster and with less vitamin loss, fry eggs on an infra-red bulb that produces 95% heat and only 5% light.

But why go on? It would be easy to allow our imaginations to run away with us and then we would become jumpy and jittery with the idea that industry is going to be revolutionized overnight; that all we have done in the past and planned for the future must be thrown away; that we must start over in the light of these developments. It is true that these developments cannot be minimized, but neither should they be magnified beyond all proportion.

This is a good time to be realistic about these revolutionary materials, gadgets, and automatic robots, that have been loosely mentioned as coming right after the war. Many of them are coming, and it is reasonable to expect that they may be produced a little faster than before. But, certainly, there is nothing frightening about it. We have had, and I can assure you, may continue to anticipate a steady stream of improved materials and equipment.

The thing that has been misleading in publicity and advance advertising has been the implication that all these things will be available any day now. It just ain't so. A long time will elapse before industry will be ready for many of these new developments. You can check that for yourself. How have new inventions always arrived? After the original patent comes a development and improvement period. There is the pioneering stage when costs are high and sales are low. Rarely is a radical innovation accepted widely at the beginning. As it proves its worth to more and more buyers, sales increase. Only then do cost and prices come down. Nobody really believes that this road has suddenly been by-passed.

"We can look for increased use of dehydrated and frozen foods. . . . . The effect of this one development on kitchen design and cooking equipment is startling in its implications"



"Not only will the restaurants of tomorrow be air conditioned, but the kitchens will be air conditioned as well and whether we, as gas men, want to or not, we are going to be in the kitchen ventilating business in a big way if we hope to maintain the high degree of acceptance gas equipment now enjoys"

New Ideas To Be Expected

We *may* expect new ideas, new faces, and new products in the commercial cooking field. Many manufacturers, like ourselves, found with the war the necessity for changes in our methods, our ideas, and our thinking. With the outbreak of hostilities, production on peacetime products ceased. All facilities were devoted to the production of war equipment. All of us found the production of war equipment different from the production of peacetime equipment. New methods were necessary to meet the drastic inspection setup which Army and Navy officials installed. Production that would ordinarily be satisfactory for peacetime use wasn't satisfactory for wartime material. Every manufacturer found new precision methods necessary. New skills

Address before Gas Meters Association of Florida-Georgia, May 19, 1945.

"The first consideration that seems to run through all these surveys is good, practical, fundamental kitchen equipment, able to do the work for which it was designed and do that job day in and day out with the least amount of interruption." Will women play a bigger part in commercial cooking, and if so, what effect will this have upon the layout of cooking equipment?

were taught his employees. Comes the end of the war and industry finds itself with vastly increased and improved production facilities. In order to put such facilities to useful purpose new markets must be discovered and developed. New products must be manufactured. Some such developments are certain to affect the commercial cooking field.

As an example of what I mean, a certain large engineering firm manufacturing machine gun mounts, self-computing gasoline pumps, and specialized services for the aeronautical field recently invited the press to sample their "sky plates." Those "sky plates" are now being prepared and frozen by the hundreds daily and sent flying the Atlantic in Naval transports. When the members of the press arrived, they were presented with a variety of partially pre-cooked meals packaged as individual portions, then frozen and stored to be served as needed.

In addition to the method of processing, a special oven was demonstrated for giving this pre-cooked and frozen food, the final cooking needed to provide attractive delicious meals. This oven, operated electrically, finishes the food perfectly in fifteen minutes. It is now designed for use only on transport planes. It weighs but thirty-five pounds and accommodates six servings at a time. Soon, this firm expects to be building ovens for the commercial airlines, for non-stop train routes, for homes, and for commercial kitchens. Because of its practical advantages, in controlling cost and eliminating waste, and in giving small operators a quality of menu not now possible, this development is being watched with interest by restaurant operators.

There are other developments in food processing which, born of war needs, promise to grow into flourishing manhood in the peace time days to come. We can look for increased use of dehydrated and frozen foods, for meat cuts tailored to the trade, for boneless roasts and standardized portions such as now packed for the Army and Navy.

With the increased use of air transportation who knows what changes might take place in our methods of processing and handling fruits and vegetables? By means of plane transport the sun-ripened, mature, fresh, deluxe fruits and vegetables can be rushed to market from all over the United States. Then, why not go a step further, why can't the food producer and processor take full advantage of these facilities and have the fruits and vegetables peeled, shelled, or cleaned right on the farm? In this way, the garbage and dirt will stay where it will be of the most value. From the cost standpoint it certainly would cut down the weight of the food to be transported, and the processing could be done in volume. The effect of this one development on kitchen design and cooking equipment is startling in its implications.

Where are these developments leading us? What effect have they had on the thinking of restaurant operators? I think these are logical questions to ask at this time because upon the thinking, vision and planning of the restaurant men will depend many of the things that you, and we, will have to do about our businesses.

Cross-Section of Restaurant Thinking

To find the answers to these questions, let's take a cross-section of restaurant thinking from the very comprehensive surveys that have been made by restaurant publications and the National Restaurant Association. What do restaurant owners want in the way of postwar equipment? The first consideration that seems to run through all these surveys is good, practical, fundamental kitchen equipment, able to do the work for which it was designed and do that job day in and day out with the least amount of interruption. Important also in their planning for the future is the ability to maintain clean and sanitary conditions in the equipment itself. They are not satisfied with equipment in its present form and will insist upon improvements that will facilitate cleaning.

Outstanding throughout the surveys is increasing insistence upon improved kitchen layout in which the flow of materials and personnel will be organized and routed for the greatest efficiency. Looking forward to peacetime competition they recognize that properly planned kitchens produce better food more quickly, more easily, and more economically; also that more rapid seat turnover is accomplished where kitchen planning eliminates cross-traffic and confusion, to say nothing of the saving in broken dishes.

"'Teen-Age Cooks for Wartime Detroit"—A typical class in the Commercial Food School under the direction of Director Breithaupt applicable in any large or medium size community whereby youths learn the fundamentals of cookery while working as apprentices. This is a thought for Gas Industry development and sponsorship to protect the future of the commercial gas load

Greater efficiency and smoother operation in the kitchen will result in lower production costs throughout the life of the restaurant. Here is a challenge and a warning to sales managers of gas companies. Fuel and equipment will not be the only competition for the commercial load. Understanding the cooking needs of our customers, and the skillful selection and installation of specialized cooking equipment will play an increasingly important part in the holding of old customers and winning of new ones. There will be a greater future for qualified kitchen engineers. The success of postwar commercial sales organizations will in a large measure depend on the individual salesman's ability to render a more intelligent layout service than his competitors.

There is a considerable group of restaurant operators who are of the opinion that the kitchen of tomorrow will be the open type where cooking will be done in full view of the customers. Restaurant men generally believe that this will enable them to do a better job of food merchandising. Such a trend will require more attractive kitchen equipment, better design, more elaborate use of stainless steel trimmings, the use of new bright metals, sanitary design, and generally, more sex appeal in the equipment.

Menus in the restaurant of tomorrow will be restricted to as few items as possible. Wartime operation has taught many restaurants that this is practical, as well as acceptable to the public. There is a general opinion among the restaurant men that their customers like it, and it certainly will have great economic value in reduction of cost and waste.

It is the general opinion of restaurant men that the repressed travel desires of our people will have an important effect upon the restaurant business of tomorrow. When gasoline becomes available again, America will take to the road as never before.

Great Interest in Ventilation

Great interest is displayed by restaurant owners in ventilation and air conditioning. Not only will the restaurants of tomorrow be air conditioned, but the kitchens will be air conditioned as well; and whether we as gas men want to or not, we are going to be in the kitchen ventilating business in a big way, if we hope to maintain the high degree of acceptance gas equipment now enjoys.

Throughout the surveys, great emphasis is laid upon the need for better heat control, improved hoods, improved insulation, and improved heat retention qualities. Many of these changes are already in process on the drawing boards and in the engineering laboratories of the manufacturers. Some of these demands can be met in designing equipment. Many must be met by better installation practice. Gas companies must set up adequate installation standards and educate their kitchen equipment dealers to follow such standards when figuring layouts and installing kitchens.

The restaurant men's ideas of postwar appliances are not all as conservative as these examples might indicate. Most of them are quite definite in the improvements they are expecting in equipment and service. Here, however, are a few of the less conservative opinions expressed by leading restaurants. Some are of particular interest to us. One large restaurant operator in Chicago would like to see vegetable, meat and stew, steam pressure cookers with time clocks to keep a desired pressure and blow a whistle at the end of a pre-determined cooking time. In this way food could be placed in the steamer, the gas (we hope) or other fire set, the time clock set and the food forgotten until the whistle blows. This signalling reminder, in his opinion, could be placed on ovens and other cooking devices as well.

While the description of the vegetable cooker may seem somewhat futuristic, some thought can well be given to the high pressure method of cooking vegetables after the war. There is a growing demand for the steam cooker in small sizes to cook to individual order. This may, as time goes on, alter the whole top-stove method of cooking vegetables. In line with this idea, a much-needed piece of equipment, according to these restaurant men, is a steam boiler, compact and easily operated, to be used in the smaller kitchens for sterilizing, operating steam tables, steam kettles and steam cookers.

The leading restaurateur of a North Carolina City, and the former president of the Greater Miami Restaurant Association would like to see dishwashers with doors opening automatically, possibly using the electric eye. He also asks for foot-pedal-operated doors for ranges, ovens and refrigerators so as to allow full use of the hands; and thus, saving food and time. He also wants foot-pedal operation of all water faucets. The application of foot pedals and the electric eye may have its difficulties, but can we discard the possibilities? Who knows that doors on cooking equipment will not be opened that way in the future, or that by using the electric eye safety automatic pilots may be provided. It is possible through the application of electronics to attain remote control of gas equipment. Precise control of cooking processes is the goal of many leading thinkers in the restaurant business. They want to write their recipes to precise temperature and time, and then be able to know that their cooks follow them.

Considerable demand is developing among advanced thinkers of this type for perfect, uniform, accurate, day-after-day results on the cook tops as well as in the ovens. Toward this end such suggestions as the following come from a famous Columbus restaurant operator: "If the automobile manufacturers years ago put air cleaners in the cars to keep out dirt, why can't they be built into ranges so that the mixture of air and gas is kept constant?" A perfect prediction of the coming of the filter on all ranges of the future, and a perfect background for the 100% primary air burner or pre-mix burner which the industry is now developing for the immediate future. We should not lose sight

Outstanding throughout the surveys is increasing insistence upon improved kitchen layout in which the flow of materials and personnel will be organized and routed for the greatest efficiency. Understanding of the cooking needs of our customers and the skillful selection and installation of specialized cooking equipment will play an increasingly important part in the holding of old customers and the winning of new ones

of that other burner, the 100% secondary air burner, which has some interesting possibilities in cooking applications.

Many improvements might be expected in the dishwashing department. Better facilities are demanded all along the line. For example, one woman operator expressed it in this manner: She said, "I would like to have machines insulated to keep as much heat as possible from the kitchen. I would also like to have someone improve the dishwashing machine wtih equipment that would rinse the dishes before they go into suds and provide the means for them to pass from the machine directly into drying equipment. I would also like the manufacturer to equip the glass washing machine with an electric dryer and then if someone with imagination will just manufacture a machine that will collect knife, fork and spoon and roll them in a napkin, I think we will have made great strides." This has an interesting angle to you gas men. The first essential to proper dishwashing is an adequate supply of hot water of proper temperature. This has been a major problem in most restaurants.

A nationally famous operator of a chain of restaurants specializing in fried chicken has this to say: "The best of equipment I have in mind is a fry station, complete with fry kettle, broiler, ovens, etc. This unit could be made in sections for accessibility and handling with chrome-plated cover over the top and ends, front and back. This should have down draft vents installed beneath the floor with suction pulling the excess heat away from the cook's face and body. The chrome shelves on this streamlined fry station should be insulated underneath so that no heat could be felt except where the heat units are actually in use and exposed. All equipment should be placed in the middle of the floor —nothing against the walls, so that they might be kept polished and clean."

Wider Use of Automatic Controls

Throughout the survey we find an increasing interest in wider use of thermostatic controls, and an improvement in the mechanical operation of these controls to meet the heavy demands put upon them in commercial kitchens. Many restaurant operators ask for thermostatically-controlled cooking tops, fry tops, and a wider use of thermostats on steam tables which should be supplied with individual sections individually controlled so that different temperatures can be maintained for different foods.

And so we see a steady trend toward more automatic operation; toward better equipment; toward the use of new devices; to the end that the restaurant of tomorrow may well be such as described by a Michigan restaurant operator who says: "From the standpoint of benefits to be derived by the restaurant operator through scientific advances brought about by the war, the greatest of such benefits I believe will be in the field of electronics. Electronics in the preservation of food and electronics in food preparation.

"In this respect permit me at this time to do a little dreaming. I visualize a counter with gorgeous salads on display—on a field of colored ice. In the background or perhaps underneath the counter is a large reserve of replacements all properly cooled.

"The steam table or hot foods will be heated electrically with large lights underneath pyrex pans so that these foods can be shown to their best advantage. And if what they say is true about developments in electronics, do not be surprised if you see steaks cooked to order, and ready for your customer by the time he reaches the checker at the end of the line.

"The same will be true about baked potatoes, chops, and many other items. Coffee urns will be concealed and coffee drawn from the front of the counter much the same as a glass of water. Sub-veyors and tray-veyors will be more commonly used to eliminate human steps as much as possible.

"And what about the idea of a moving tread in front of the cafeteria counter? Does it sound too fantastic? It might have possibilities. It would insure the line moving at a pace which you could set—so many per minute. It would mean, of course, precision timing with your employees trained to move at a regular gait of speed. It might have the evil effect of retarding sales as it would cause your customers to move along and would not permit their pondering on a choice of foods. On the other hand, it might act as a booster of sales because it would make the customer make up his mind in a hurry and once decided on they could not retrace their steps to put back something they had taken. Fantastic—yes; but could be."

World of Change

So there, sir, you have the pattern of thought of the industry as expressed by the leading thinkers in the restaurant field. It must be evident to all of us that we are in a world of change; that we cannot sit back and be self-satisfied with our business; that there are influences at work at all times, some favorable, some unfavorable. The favorable we must capitalize, and the unfavorable we must meet with intelligent and progressive thinking. Most of us remember the coal and gaslight days. We took the commercial cooking business away from coal, but competition took the lighting business away from us. So far as commercial cooking is concerned, don't let us get in the position of the coal industry. Fortunately, we approach the postwar market with our industry stronger than it has ever been in its history with technical ability, laboratory facilities, sales vision, and strength in its manufacturing division.

That brings us to the question "What is the Gas Industry Program to Meet This Situation?"

Taking conviction from the strong position of our industry, I can say "the situation is well in hand." Comprehensive studies and recommendations have been made by the American Gas Association, the Pacific Gas Association, as well as by progressive gas men and manufacturers. Many of the demands of the restaurant industry have been anticipated by the recommendations of the associations, and development work is already under way.

Manufacturers of equipment, as well as the American Gas Association are experimenting with flash tube lighting, electric ignition, improvements in pilots, and the use of filters between the manifold and the pilot, in order that the most complete, dependable, automatic service can be provided in the lighting of gas equipment.

Recommendations already call for the wider use of thermostatic controls on such equipment as fry-plates and range tops.

Great emphasis is being given to new burners and improvements in existing burners, including a 100% primary air burner and a 100% secondary air burner. Much information has already been published on these developments in the AMERICAN GAS ASSOCIATION MONTHLY, and other bulletins by the American Gas Association Laboratories. It is also one of the most important developments now before manufacturers' engineering and research departments.

Much attention is being given to improvements in design to make equipment easier to clean, as well as to improve its appearance by use of light metals, smooth flush surfaces, and streamlining.

Engineers are at work on oven burners designed to permit temperatures of 250° in

Roy E. Wright, chairman, Food Service Equipment Committee of the Industrial and Commercial Gas Section, discussing with Walter S. Anderson, chairman, Subcommittee on Engineering Selling, progress being made in preparation of the new A. G. A. Commercial Cooking & Baking Manual. Left to right: Eugene D. Milener, W. M. Schilling, Walter S. Anderson, Roy E. Wright, C. George Segeler and Harry A. Sutton

line with recent and current A. G. A. research; also in the improvement in design of oven bottoms, racks, and improved door construction to secure easy opening, proper sealing and increased insulation. Tests are constantly being made to improve insulation, reduce surface temperatures, and improve heat distribution.

This not only covers the range oven, but roasting and baking ovens as well. Study is being given the installation of ranges and ovens in various combinations to meet specialized cooking needs. There is a happy balance that should always be kept in mind in the design of a kitchen and the application of specialized equipment. You who have seen the transformation of the commercial gas kitchen will remember the old days of installing gas kitchens. The extent of most planning was to measure the wall and say thirty feet of wall—thirty feet of ranges. Now let's not make the same mistake again. Let's use special ovens judiciously. Let's use them only where they should be used; use skeleton ranges when they fit. Let's tailor-make these installations for the cooking job. Let's be specialists ourselves in our own business and not go off the deep end.

Increased interest on the part of the kitchen operator in cleanliness brings about demands for easier ovens to clean. New and inexperienced help coming into these kitchens makes it necessary that the operation be simplified in every possible way, and that uniform and automatic operation be developed to the greatest possible extent.

War-Borne Problems

The war has brought another competitive factor to bear on our business. Thousands of ships, submarines, landing craft, battle ships, and airplanes are equipped with electric cooking equipment of the finest kind, and thousands of men will come back trained in the use of this equipment. Can we minimize the problem this brings before us? Many of these men will go into the restaurant business, and aggressive selling combined with good equipment will be necessary to sell them gas for their job.

Important developments can be looked for in postwar broilers. Among them are improved raising and lowering devices for easier operation. Easier cleaning throughout. Reduced surface temperatures. Automatic pilots and pilot filters with improved "ceramic burners" and better heat distribution.

Fryers, too, are receiving the searching eye of engineers to develop more durable fryer pots, easier cleaning, better heat transfer and faster recovery. With improved types of gas burners, counter-type models having attractive appearance, high capacity, light weight, and proper venting should soon be available.

These are enough, I believe, to show that the gas industry is alive to the responsibility and obligation it has to provide its customers with the right kind of equipment, service, and intelligent handling of their problems and future problems. Much will depend upon the manufacturers. A great deal will depend upon the gas companies; and a great

AMERICAN GAS ASSOCIATION

INDUSTRIAL AND COMMERCIAL GAS

ADVERTISING FOR JULY

The National Advertising Committee of the Industrial and Commercial Gas Section, J. P. Leinroth, chairman, and F. B. Jones, vice-chairman, announces that full page advertisements will appear in the trade and business magazines listed below during the month of July. These advertisements are prepared in cooperation with the Committee on National Advertising as part of the industry's national advertising campaign.

GENERAL MANUFACTURING

GAS and the Business Men of Tomorrow. BUSINESS WEEK (July 28)

A versatile continuous annealing *GAS* furnace with Great Post War Possibilities. MODERN INDUSTRY (½ page)
INDUSTRIAL HEATING

Automatic Precision Control influenced Ault & Wiborg engineers to choose *GAS*. FACTORY MANAGEMENT & MAINTENANCE

METALS INDUSTRY

Memo to Mr. Post-War Planner: FOUNDRY

A versatile continuous annealing *GAS* furnace with Great Post War Possibilities. THE IRON AGE (July 5)
STEEL (July 23)

To secure greater depth of hardness without overheating surface—tool maker switches to *GAS*. METALS AND ALLOYS
METAL PROGRESS

TECHNICAL COLLEGE PUBLICATIONS

GAS-Fired Furnace Helps Clippers Keep Busy Schedules.
UNIV. OF ROCHESTER INDICATOR — PURDUE ENGINEER
DUKENGINEER — IOWA STATE ENGINEER
UNIV. OF OKLAHOMA SOONER SHAMROCK — TULANE UNIV. TECHNI-TORQUE
PENN STATE ENGINEER — NEW YORK UNIV. QUADRANGLE

CERAMIC INDUSTRY

National Ceramic Co., Trenton, N. J. Increases production 30% and on new products, saves 20% since switching to *GAS*.
CERAMIC INDUSTRY

GLASS INDUSTRY

National Ceramic Co., Trenton, N. J. Increases production 30% and on new products, saves 20% since switching to *GAS*. GLASS INDUSTRY

CHEMICAL FIELD

Globe laboratories find *GAS* an invaluable ally in Precision Control.
CHEMICAL & METALLURGICAL ENGINEERING

New *GAS* Drying Oven helps reduce costs—speed production—improve working conditions.
CHEMICAL AND ENGINEERING NEWS (July 10)

TEXTILE FIELD

For every textile operation requiring heat *GAS* is the superior fuel.
TEXTILE WORLD

HOTEL AND RESTAURANT FIELD

St. Moritz Hotel chooses *GAS* to bake its famous pastries.
AMERICAN RESTAURANT

Cincinnati's Hotel Gibson uses *GAS* for all its famous Cooking and Baking. HOTEL MANAGEMENT

Colorful Minneapolis Restaurant finds heavy duty *GAS* equipment "Ideal" from Every Angle. RESTAURANT MANAGEMENT

Director of Overlook Hospital (Summit, N. J.) pays tribute to *GAS* equipment. INSTITUTIONS

SCHOOL FIELD

Sparkling *GAS* Equipment cooks for Mt. Mercy's staff and students.
NATION'S SCHOOLS

HOSPITAL FIELD

Director of Overlook Hospital (Summit, N. J.) pays tribute to *GAS* equipment. MODERN HOSPITAL

FOOD PROCESSING

Quality Bakers tell *why* they're glad they switched to *GAS*.
FOOD INDUSTRIES

BAKING FIELD

Quality Bakers tell *why* they're glad they switched to *GAS*.
BAKERS' HELPER (July 14)
BAKERS WEEKLY (July 23)

FOUNTAIN AND RESTAURANT FIELD

Memo to Mr. Post-War Planner: CHAIN STORE AGE
(Fountain-Restaurant Section)

deal, in addition, will depend upon our Associations to whom we will look for leadership, coordination and research. We are all in this together, and will succeed only if we stick together, work together, and fight together to the attainment of a definite goal.

* * * * *

Since this paper was written V-E day has come. V-J day cannot be too far ahead, and when the shooting war ends, the selling war will start.

Every kitchen on your line with obsolete equipment; every kitchen with modern equipment which the cooking crew is not using to the best advantage, is a potential invitation to competition. What the industry needs now is action. We know where we are going—we know how we are going to get there. This story must be carried into every kitchen—to every factor in the commercial equipment field. Every kitchen on your line of any importance should be canvassed. New and attractive plans of equipment layout should be presented showing the use of specialized gas cooking equipment. Every encouragement and aid should be given kitchen operators to plan their postwar future around the use of modern gas equipment. Wherever an appliance is used improperly instruction in correct use should be given. We know how superior modern gas equipment is to any competitive equipment. Our job is to see that every commercial kitchen operator knows it too.

The battle of selling in the postwar market will be severe. The best defense is a strong offense. The best plan to follow is to take action *now* and stop your competition before it gets started.

Prunes Saved by Natural Gas

TWELVE THOUSAND pounds of prunes that had developed a slight mold were reconditioned with emergency equipment operated by natural gas of the United Gas Corporation. A recent story in *United Gas Log* states that the Waples Platter Wholesale Grocery Co., Memphis, Texas, discovered the mold formation on its stock of prunes, which was due to the fruit having been allowed to cool before packing.

The company was advised by the Bureau of Foods that this mold condition could be corrected by immersing the prunes in boiling hot water for one minute, draining and repacking while still hot. A call tc the gas company industrial department resulted in the assembling and installation of a 30,000 B.t.u. gas laundry furnace burner, a No. 3 wash tub, and a wire basket. With this hastily installed equipment, the prunes were reprocessed and so saved for the market.

Heating System Guide

A 24-PAGE consumer booklet entitled "Plan To Be Comfortable," designed to guide home owners in the selection of heating systems, was released June 1 by The National Radiator Company, Johnstown, Pa. While the booklet was especially written for the layman, it will also be helpful to architects, builders and heating contractors in discussing heating problems with home owners planning postwar building or remodeling.

The National Radiator guide to proper heating takes an informative approach. Opening pages present a variety of questions concerning fuels, summer and winter air conditioning and the importance of central heating systems. These and other questions are then answered in everyday language.

Tappan Spotlights War Activities

A RESUMÉ of the wartime activities of the Tappan Stove Company, Mansfield, Ohio, has been published in an attractive illustrated booklet. It points out that Tappan has built 45 different products during this war, all of them specialized and requiring exceptional engineering and manufacturing talent.

Among the wartime products illustrated are a complete airplane refueling system for advance air bases; cast aluminum connection and distribution boxes for big Navy cruisers and battleships; switch boxes for Navy guns; watertight flare containers for transport ships; Army tent stoves; cast iron noses for chemical warfare service incendiary bombs; incendiary bombs and bomb containers; lightweight combination gasoline and wood ranges for the Air Force; water injector tanks and drop fuel tanks, etc. Of special interest is a sky kitchen designed for the Navy's large patrol bombers which is described. The complete galley weighs only 45 pounds. A full-sized refrigerator weighing only 51 pounds comprises another part of the Tappan-designed sky kitchen. Many citations and government awards attest to the ingenuity and efficiency of its personnel.

The forepart of the booklet reviews briefly the history of the company which was established in 1881, and spotlights the pioneer developments which feature its peacetime gas ranges.

British Ad Campaign

A LARGE-SCALE advertising campaign embracing national, district, trade, technical and professional press advertising has been launched for the British Gas Council. Media includes 166 national and provincial newspapers and selected magazines and 87 specialized journals. The campaign will last till March next year.

The new campaign will follow a policy carefully studied and defined by the publicity committee. The outstanding characteristics of gas—flexibility and controllability of heat—will be brought to the fore. The campaign in the trade, technical and professional press will be based on the statement that, in the country's change-over from war to peace, gas will have an important part to play.—*The Gas World,* London, May 26, 1945.

Electrostatic Spraying Helps Gas Drying

THE use of gas for baking industrial finishes can only produce a product equal to the application of that finish. To further better application of these finishes and so secure a more satisfactory end product, a new process of electrostatic spray painting has been developed by the Harper J. Ransburg Co., of Indianapolis, Indiana.

The spray painting of a part surrounded by an electrostatic field is in addition to the company's "detearing" process by the same means. This company claims savings up to 75% of the paint formerly used with hand spray or high pressure fixed gun spraying may be effected and man hours reduced, at the same time producing better and more complete coverage.

While there are some limitations as to shapes that may be covered by this electrostatic spraying due to recessed sections and protruding edges, this process does achieve more uniform coverage and so improves the finish when gas dried or baked. Through this improved coverage less paint is used than was formerly wasted by overspraying, and so reduces the cleaning of spray booths to only once in six weeks as against once or twice daily.

The Ransburg Company has prepared a folder on its electrostatic painting process that should be of interest to all users of gas for curing industrial finishes.

Speaks on Commercial Cooking Equipment

Daniel J. Brogan

DEVELOPMENT of New Ideas in Commercial Cooking Equipment was the subject discussed by Daniel J. Brogan, sales manager, Oven Department of The G. S. Blodgett Company, Inc., before a meeting of the Pittsburgh Stewards and Caterers Association held in Pittsburgh, Pa. on May 15, 1945.

Mr. Brogan stressed the necessity of specialized equipment for successful mass cookery with the resulting economies in gas consumption and floor space, and the added satisfaction of better food preparation and working conditions. He expressed the belief that nine out of ten kitchens were overequipped. One of the reasons for this was given as the frequent lack of proper planning for the cooking job to be done. The proper selection of equipment, used as it was designed to be used, will promote profits in commercial gas cooking at the source. Attention to kitchen efficiency and modern cooking methods will contribute to the success of commercial cooking establishments, Mr. Brogan stated.

Determining Surface Moisture in Coal[1]

Written discussion of the following paper will be welcome for subsequent publication in the MONTHLY. Such discussion should be signed and should be submitted not later than August 10. It will be referred to the author for comment and published in the September issue.

This article is a condensation of U. S. Bureau of Mines Report of Investigations 3811.

Although there is considerable need in industry for a method for measuring the surface moisture content of crushed solids such as coal, no satisfactory method has been available.

In this method the surface moisture is dissolved from crushed coal by solvents such as the alcohols while the internal moisture content of the coal remains essentially unaffected. The solvent containing the surface moisture is filtered from the crushed coal and the amount of surface water determined by measuring the dilution of the solvent by its change in specific gravity.

This method has been in use for over a year at the Pittsburgh station of the Bureau of Mines and has proved very satisfactory. Little manipulative skill is required on the simple equipment used and the time required for a determination is about 15 minutes as compared to the several hours required for the ordinary total moisture determination in drying ovens.

BY L. D. SCHMIDT[2]

and

WM. SEYMOUR[3]

IN the work at the Central Experiment Station of the Bureau of Mines on the problem of controlling the bulk density of the coal charge in byproduct coke ovens, an acute need developed for a quick, accurate method of measuring the surface-moisture content of crushed coal. As no satisfactory methods for measuring surface moisture were available[4] a project was initiated to develop a method. This report covers the findings in the initial phases of this project and describes the tentative method now in use at the Bureau of Mines. The number of requests that have been received for a description of the method at its present state of development indicates the great need of the industry for a reliable measure of surface moisture, and this fact has prompted the authors to prepare this preliminary report.

Presented by
SUB-COMMITTEE ON GAS, COKE AND BY-PRODUCT MAKING PROPERTIES OF AMER. COALS
J. S. HAUG
Chairman

In this report the total moisture of wet coal is considered as made up of two components, surface moisture and internal moisture. Presumably in the case of wet coal the term "internal moisture" is synonymous with the inherent or bed moisture of coal saturated with moisture but containing no surface water. It is the surface-moisture content rather than either the total or the bed moisture content that controls primarily such physical properties of crushed coal as bulk density, angle of repose, etc.

All the present work is based on the idea that the surface moisture of crushed coal can be made to dissolve quickly into solvents such as alcohols, while the internal moisture of the coal remains essentially unaffected. The solvent containing the surface moisture is filtered from the crushed coal and the quantity of surface water determined by measuring the dilution of the solvent.

The following method has been found satisfactory for coking coals and has been in use for more than a year in the research work on bulk-density control by the Bureau of Mines. Little manipulative skill is required with the simple equipment used, and the time required for a determination is about 15 minutes, compared to several hours required for ordinary total-moisture determination in drying ovens. (A.S.T.M.)[5]

The method is based upon the change in specific gravity of alcohol caused by the absorption of water. The test consists of extraction of the surface water from coal with a known volume of alcohol and determination of the change in the specific gravity of the alcohol due to absorption of this water. From the data obtained the weight of the surface moisture is calculated.

Apparatus used:

Buechner funnel (not less than 6¼ inches diameter)
1000 ml. suction flask with stopcock at outlet
Adapter with stopcock
Vacuum pump or aspirator
250 ml. cylinder
Hydrometers, total range, 0.7800 to 0.8800; subdivisions .001 maximum
Thermometer 10° to 35° C.; subdivisions 1°
500 ml. volumetric flask
Balances, 2 kg. capacity; accurate to 1 gram
Filter papers for Buechner funnel
Vacuum gauge or manometer desirable
Necessary suction tubing
Stand for apparatus
Sample jars, about 2 liter capacity; with air-tight covers (2-quart fruit jars are satisfactory)

Chemical used:

Ethyl alcohol or ethyl alcohol denatured with wood alcohol

The set-up of the filtering apparatus is shown in Figure 1. Enough sample to about

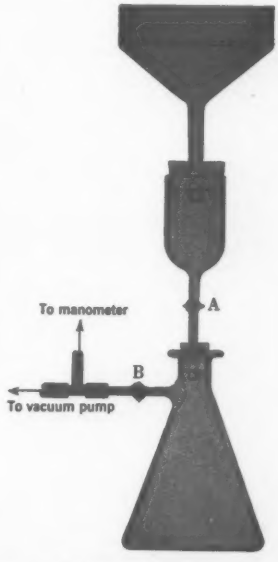


Figure 1. Apparatus for determination of moisture in coal

[1] Published by permission of the Director, Bureau of Mines, U. S. Department of the Interior, Washington, D. C. The complete report is available in printed form in Bureau of Mines Report of Investigations No. 3811.
[2] Engineer-in-charge, Coke Production Survey, Bureau of Mines, Pittsburgh, Pa.
[3] Chemical engineer, Bureau of Mines, Pittsburgh, Pa.
[4] Guy, T. W., Need for a Standard Method for Determining Surface Moisture in Coal: Am. Inst. Min. and Met. Eng., Tech. Publication 935, (1938) 20 pp.
[5] American Society for Testing Materials, Sampling and Analysis of Coal and Coke (A.S.T.M. Designation D271-42, A.S.A. No: K18-1942): Am. Soc. Test. Mat., 1942, Part III, Nonmetallic Materials.

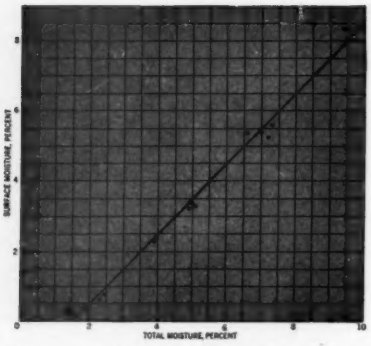


Figure 2. Relation between total and surface moisture, coal A

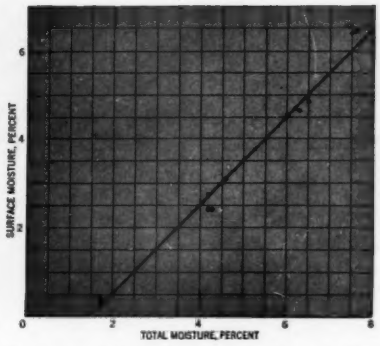


Figure 3. Relation between total and surface moisture, coal B

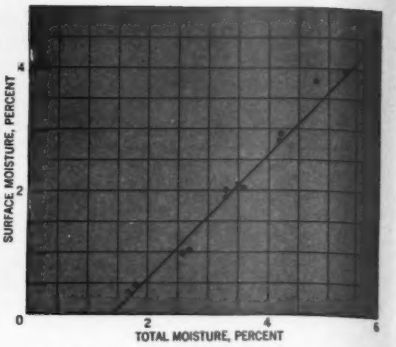


Figure 4. Relation between total and surface moisture, coal C

half fill the sample jar is taken, usually about 500 to 600 grams. These samples may be obtained at a mine, washery, plant, or yard, closed tightly to avoid loss of moisture, and transported to a convenient place for analysis. The extraction is performed in the sample jar in order to include any free water that may be on the lid or inside the jar.

The net weight of the sample is determined from the gross and tare weights of the sample jar. The specific gravity and temperature of the alcohol are determined and exactly 500 ml. of alcohol is measured in the volumetric flask. A filter paper of the correct size is placed in the Buechner funnel and weighted down with a chain or ring. The funnel and suction flask should be dry or may be washed with the alcohol before the specific gravity and temperature are taken. Close stopcock A, open stopcock B, and evacuate the flask. The 500 cc. of alcohol is then added to the sample of coal in the jar, the cover replaced, the mixture agitated slightly and pressure released, then allowed to stand for exactly 5 minutes with frequent and thorough shaking. Decant the contents of the jar into the Buechner funnel; close stopcock B, and draw off the alcohol from the coal by opening stopcock A. When the pressure is equalized shut stopcock A, disconnect flask from Buechner funnel, shake well, and pour enough of the filtrate into the 250 ml. cylinder to take specific gravity and temperature.

Specific-gravity readings should be estimated to the fourth decimal place and temperatures to nearest 0.1° C. The specific gravity is corrected to 25° C. (or any convenient temperature). The temperature correction for specific gravity is 0.0008 per degree C. deviation from the base in the range ordinarily used in these tests. The percentages of alcohol before and after treatment are taken from a graph prepared from results obtained by the addition of known weights of water to 500 ml. of the alcohol to be used, or prepared from data in the International Critical Tables.[6]

The water absorbed by the alcohol is calculated as follows:

$$\text{Water from coal, grams} = V_i d_i \left[\frac{A_i}{A_f} - 1\right]$$

V_i = initial volume of alcohol in ml.
d_i = initial density of alcohol, grams per ml.
A_i = initial percentage alcohol by weight.
A_f = final percentage alcohol by weight.

The alcohol can be reused until it contains about 30 percent water.

Tests indicate that the particle size of the coal is not important as long as there are not excessive amounts of very fine coal. Although some internal moisture is extracted from samples ground in a ball mill to minus 60-mesh as prepared in the standard laboratory method, usually the percentage of such material in the ordinary commercial sizes of coal is so small that the error due to extraction of internal moisture is negligible.

The method has been thoroughly checked for use on the high-grade, low internal moisture coking coals of the east and found to be reliable on these coals.

Tests on subbituminous coal with high inherent moisture indicates that the internal moisture is slowly extracted and that extrapolation or a method of calculation should be applied to determine surface moisture accurately.

Results Obtained on Coals as Crushed for Use in Byproduct Coke Ovens

In the work of developing methods of control of the bulk density of the coal charged into byproduct coke ovens, large samples of the crushed coal actually used at four commercial coke plants were obtained.[7]

Each large sample was divided into a number of smaller samples or lots and different quantities of water were added to each lot. After suitable mixing a 1-quart sample was taken from each lot for determination of surface and total moisture. Total moisture was obtained by the regular A.S.T.M. method, utilizing a drying oven at 105° C. Surface moistures were determined by the method given above.

In Figures 2, 3, 4, and 5 the surface moisture of these samples is shown plotted against the total moisture as determined by oven drying. It will be noted that the experimental results fall closely along straight lines. The deviations of the individual points from the straight line include sampling errors, errors in the total moisture determination (A.S.T.M.) and errors in the surface-moisture test. In general, the results indicate very satisfactory precision of measurement.

TABLE 1
PROXIMATE AND SIEVE ANALYSES OF SAMPLES OF CRUSHED COAL OBTAINED AT BYPRODUCT COKE PLANTS (AS RECEIVED BASIS)

Coal:		*A*	*B*	*C*	*D*
Moisture,	percent	2.0	6.0	1.9	1.7
Volatile matter,	do.	29.0	31.8	34.1	22.8
Fixed carbon,	do.	61.6	55.5	57.4	66.2
Ash,	do.	7.4	6.7	6.6	9.3
Sulfur,	do.	0.6	1.2	0.9	0.7
B.t.u.		13,850	13,270	13,880	13,720
Real specific gravity		1.353	1.344	1.335	1.372
Cumulative percentage retained on U. S. Standard Sieve No.					
4		6.9	22.1	10.3	12.4
6		13.0	31.5	18.2	20.1
8		20.9	40.8	25.8	26.8
16		40.9	59.0	46.3	45.2
40		68.4	79.5	74.0	70.9
80		83.6	89.5	88.4	85.0
140		89.6	93.0	93.5	90.7
200		92.8	94.9	95.5	94.0
Pan		100.0	100.0	100.0	100.0

[6] International Critical Tables, V. 3, 1928, pp. 116-117.

[7] Landers, W. S., Schmidt, L. D., and Seymour, Wm., Control of Bulk Densities in Coke Ovens: Studies on the Coal Used at Three Byproduct Coke Plants: Bureau of Mines Report of Investigations 3807, 1945, 22 pp.

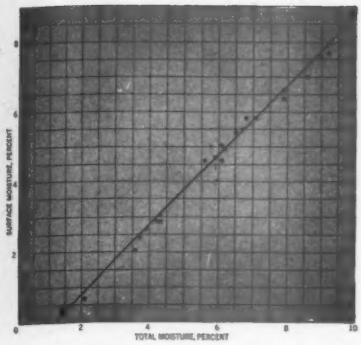


Figure 5. Relation between total and surface moisture, coal D

Table 1 shows the proximate and sieve analyses of the four large coal samples used in these tests. Each sample is a blend of high- and low-volatile coals. It will be noted that the sieve analyses show a considerable range in the fineness of crushing in these four samples.

In Figures 2 to 5 it will be noted that for these four coking coal mixes when the surface moisture is zero the total moisture ranges only from 1.3 to 1.5 percent. This shows that these coals have virtually the same internal moisture content.

Use of Methyl Alcohol in Determining Surface Moisture

All the tests previously described were made using denatured ethyl alcohol. The use of methyl alcohol has some favorable points and some unfavorable. At the present time methyl alcohol may prove to be more easily available. It can be obtained in a very pure state and it dissolves water very rapidly. In some cases the latter quality may prove to be a disadvantage in that the series of tests to be described show that methyl alcohol extracts internal moisture from the coal at a higher rate than does ethyl alcohol.

A series of tests was made on a sample of coal from the Warden mine in the Pittsburgh bed. This coal had been stage-crushed to pass a ¼-inch screen. Table 2 shows the proximate and sieve analyses of this coal. Ten lots of this coal, as received, were put into ten 2-quart fruit jars, various amounts of water were added and the jars closed tightly and allowed to stand for 40 hours. The samples were then subjected to the regular procedure for determining surface moisture but using methyl instead of ethyl alcohol. The results of these tests are given in Table 3, and in Figure 6. The results show that in all cases more water was extracted by the methyl alcohol than had been added to the coal. This shows that the methyl alcohol extracts some internal moisture from the coal.

Another series of tests was made on this same coal to compare directly the effect of changing from ethyl to methyl alcohol. Six samples of the 0 x ¼-inch coal (as received) were placed in six 2-quart fruit jars. Fifteen grams of water were added to each sample. Three samples were tested with methyl alcohol and three with the regular denatured alcohol. In the results shown in Table 4 it will be noted that the methyl alcohol extracted nearly .5 percent more water than did the ethyl.

A number of tests were made to learn how finely coal must be crushed in order to have methyl alcohol extract all of the internal moisture in a 5-minute period of exposure.

TABLE 2
PROXIMATE AND SIEVE ANALYSES OF PITTSBURGH BED COAL FROM WARDEN MINE, STAGE-CRUSHED TO PASS A ¼-INCH SCREEN

Proximate Analysis:		*As received at Bureau of Mines*	*Air-dried*
Moisture,	percent	1.8	1.3
Volatile matter,	do.	37.2	37.4
Fixed carbon,	do.	56.9	57.1
Ash,	do.	4.1	4.2
Sulfur,	do.	.8	.8
True specific gravity			1.311

Sieve Analysis: *Cumulative percentage retained on U. S. Standard Sieve No.*	*Percent*
4	30.6
8	67.6
16	83.6
40	94.2
80	98.1
140	99.2
200	99.8
Pan	100.0

TABLE 3
EXTRACTION OF WATER FROM WETTED PITTSBURGH BED COAL (0 x ¼-INCH) USING METHYL ALCOHOL

Sample No.	*Weight of sample (dry coal basis) grams*	*Water added, grams*		*Water extracted, grams*	
		Total grams	*per 100 grams dry coal*	*Total grams*	*per 100 grams dry coal*
17	687.3	13.0	1.89	14.5	2.11
18	638.5	13.0	2.04	14.9	2.33
19	661.5	26.0	3.93	26.9	4.07
20	667.3	26.0	3.90	27.5	4.12
21	606.8	39.0	6.43	40.8	6.72
22	640.0	39.0	6.09	40.2	6.28
23	659.6	52.0	7.88	54.2	8.22
24	699.8	52.0	7.43	54.2	7.75
25	667.0	65.0	9.75	67.8	10.16
26	676.3	65.0	9.61	69.9	10.34

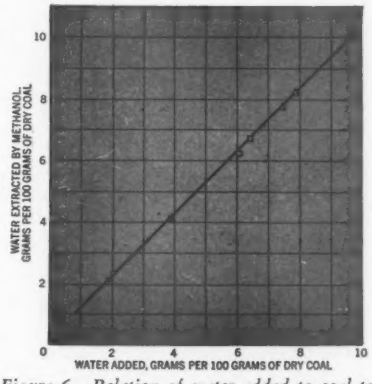


Figure 6. Relation of water added to coal to that extracted by methanol, Pittsburgh bed coal (0 x ¼ inch)

Five samples of air-dried coals from various sources and selected at random from those prepared by the Coal Analysis Laboratory for analysis were tested. These samples had been air-dried and then pulverized in a ball mill to pass a No. 60 sieve.

Sieve analyses on the samples showed that about 35 to 40 percent of the coal would pass a No. 200 sieve. The results of the extraction with methyl alcohol are shown in Table 5. It is apparent that under the conditions of test methyl alcohol extracts all the moisture from these coals crushed to pass a No. 60 sieve.

Similar tests were made on three samples selected at random from Coal Analysis Laboratory samples crushed to pass a No. 60 sieve and extracted with ethyl alcohol. The results in Table 6 show that under the conditions of test the ethyl alcohol does not remove all the internal moisture from coal ground to pass a No. 60 sieve.

The ordinary commercial sizes of coal and, for that matter, even crushed coal as used to charge byproduct coke ovens contain only small percentages of coal that will pass a No. 60 sieve. Consequently the amount of extraction of internal moisture from these sizes when ethyl alcohol is used is very small. As a

TABLE 4

DIRECT COMPARISON OF EXTRACTION OF WATER FROM WETTED COAL BY METHYL AND ETHYL ALCOHOL

Alcohol used	*Weight of sample, grams*	*Water added*		*Water extracted*		*Difference*
		Grams	*Percent*	*Grams*	*Percent*	
Denatured Ethyl:						
	606.1	15.0	2.47	12.80	2.11	—.36
	558.9	15.0	2.68	14.41	2.58	—.10
	596.0	15.0	2.52	14.54	2.44	—.08
	Average 587.0	15.0	2.56	13.92	2.38	—.18
Methyl:						
	600.8	15.0	2.50	16.78	2.79	+.29
	593.2	15.0	2.53	16.24	2.74	+.21
	566.8	15.0	2.65	17.10	3.02	+.37
	Average 586.9	15.0	2.56	16.71	2.85	+.29

TABLE 5

COMPARISON OF A.S.T.M. OVEN MOISTURES AND MOISTURE BY EXTRACTION WITH METHYL ALCOHOL

Sample No.	*Moisture, percent*	
	Methyl alcohol	*A.S.T.M. oven*
31	1.91	1.25
32	8.49	6.77
33	2.45	1.11
34	18.97	18.42
35	2.01	1.29

TABLE 6

COMPARISON OF A.S.T.M. OVEN MOISTURE WITH MOISTURE OBTAINED BY EXTRACTION WITH ETHYL ALCOHOL

Sample No.	*Moisture, percent*	
	Ethyl alcohol	*A.S.T.M. oven*
4707	.36	1.23
4708	1.00	1.70
4709	1.14	1.75

result, denatured ethyl alcohol can be used to measure the surface moisture content of coking coals.

A series of tests made upon a coal of subbituminous B rank with about 17 percent of internal or inherent moisture indicated that alcohol slowly extracts the inherent moisture and that some method of calculation or extrapolation should be devised to determine the surface moisture accurately.

Further research is being conducted to enable a more fine distinction to be drawn between surface and internal moisture. However, the method as it stands should prove precise enough for the most practical applications.

Summary and Conclusions

A rapid method has been developed for measuring the surface moisture content of coal. Although development work is still proceeding to prove the method and ascertain its limitations more precisely, the method as it is described should be directly applicable to many problems in industry.

The procedure can be used for a rapid and precise determination of total moisture content of coal if the latter is crushed to pass a No. 60 sieve and is extracted with methyl alcohol. The higher alcohols, such as ethyl and isopropyl, are better adapted to differentiating between surface moisture and internal moisture in coal. Undoubtedly the same procedure could be used with other solvents.

Charles A. Munroe Award Available

SPLENDID recognition in the gas industry is provided each year for the individual who, in the opinion of the A. G. A. Executive Board, has made the most outstanding contribution for the benefit to the industry, by the Charles A. Munroe Award. Such achievement can be in the field of research, accounting, safety, promotion, operating methods or any field related to the industry's general interest. The award consists of a permanent engrossed certificate and a substantial cash compensation.

Applications must be filed with the Association on or before August 1, 1945.

Speak for Themselves

DURING 1944, nearly all domestic customers, about 85,000, used gas for cooking. There were 21,159 gas refrigerators in use, 1,222 house heating accounts and approximately 7,860 water heaters. The record of the performance of gas appliances during the difficult days of the war should be their best recommendation after the war.—Annual Report of Brooklyn Borough Gas Co.

Excess Drip and Its Reduction

BY S. C. SYMNOSKI

Asst. Supt. of Holder Stations, The Philadelphia Gas Works Company

DURING the winter of 1945, in Philadelphia as in most other East Coast cities, the gas industry encountered a number of new experiences. A particularly interesting one involved the quantity of water condensate or drip, which had to be removed from the transmission and distribution mains.

Compared to other years of similar temperature conditions (both with respect to the temperature of gas leaving the plant and ground temperatures), the quantity recovered showed increases which were entirely abnormal and required an explanation. The increased amount of condensate was so great that it over-taxed the drip-pumping equipment. This condition was particularly aggravated in the transmission system, which consists of piping and district governors operating at from 3 to 11 pounds pressure.

Control of the amount of condensate in a transmission system, such as in Philadelphia, is important not only because of the additional labor and expense of removing the drip, but also if this condensate is permitted to fill the drips and partly fill sections of the main, oily condensate, when present on the surface of the water, contains potential gum formers. When the velocity of the gas is increased, these gum formers are carried mechanically to the consumers' appliances. Coincident with the presence of excess condensate, in certain localities there was a marked increase in consumers' appliance complaints, attributed to "liquid phase gum."

Preliminary examination showed that the gas entering the transmission compressors was at a temperature at which it could not theoretically carry the amount of water being pumped from the transmission system, and it immediately became apparent that a study was necessary in order to detect the source of this additional water.

Our first thought was that water was entering the transmission system from some outside source. Consequently, we first investigated a transmission main which runs in a tunnel below the Schuylkill River bottom—the one place in the system where the pressure of water on the outside of the gas main was greater than the gas pressure on the inside. A determination of the water present in the gas at the inlet and the outlet ends of the tunnel showed no increase in water content in the passage of the gas through it. This determination was made by complete removal of the water present in the gas at each end of the tunnel by means of calcium chloride absorption. Both determinations indicated more water per M.C.F. than existed on the inlet to the compressors.

The next situation studied was as follows:

The compressors which pump the gas through the transmission system are of the multi-stage turbine-driven centrifugal type, designed with labyrinth water seals on the shaft ends. These water seals are controlled by ⅜" manually-operated water connections without sight feed. In order to make these

shafts perfectly gas tight the tendency on the part of the operating engineers was to use an excess of water. Again, with calcium chloride tests, it was established that considerable water was picked up by the gas in transit through these compressors. Steps were taken immediately to reduce to a minimum the amount of water used on the labyrinth seals. This condition was aggravated by the fact that the newer machines of this type, installed late in 1944, had greater clearances in the rings than the older type machines, and it was found that there was a greater quantity of water picked up by the gas in transit through the new compressors.

The results of control of this extraneous inflow of water into the system has definitely shown up in the amount of drippage pumped. It took considerable time to clear the system of the drip, but it is believed that conditions are now normal. The quantity of drippage which is now removed from the system is normal and in direct relation to the initial saturation temperature, atmospheric temperature and ground temperature.

In order to control this condition and have the facts brought to the notice of the operators, water dew-point tests are taken once a day at the inlet and outlet of all stations where this type of compressor is in operation. More than 2 deg. F. rise in the saturation of the gas between inlet and outlet indicates an excess of water being used on the labyrinth seals. The amount of water going to the seals should be the minimum required to prevent leakage of gas between the shaft and casing.

In this particular case the method of determining the dew-point with the hygrometer is recommended over the method of total absorption with calcium chloride. The absorption method requires considerable time to collect a weighable amount of water (approximately three hours). This method also requires careful weighing of the absorption tubes, metering of the gas passed, and some calculation converting from grams H_2O/M to saturation temperature.

The hygrometer method is simple, quick and the results using this method compare favorably with those obtained by the absorption method.

When the proper water rate is once established, the number of tests taken can be reduced and merely used as a check rather than a guide of water rate.

Technical Section Committee Meetings

THE Technical Section of the American Gas Association held a series of committee meetings June 4, 5 and 6 at the Hotel Pennsylvania, New York, for the purpose of reviewing the various assignments undertaken during the year to date and for consideration of unfinished business to become part of assignments to be considered next year.

Among the meetings held and the presiding officers were: Gas Production subcommittee chairmen—R. Van Vliet; Chemical subcommittee chairmen—Dr. C. W. Wilson; Distribution subcommittee chairmen—T. H. Kendall; Motor Vehicle subcommittee chairmen—S. G. Page. A luncheon meeting of all committee chairmen, vice-chairmen and subcommittee chairmen was held Tuesday, June 5.

The following day, the Managing Committee of the Section held a luncheon meeting, including affiliated representatives, Advisory Committee and committee chairmen and vice-chairmen. L. E. Knowlton, chairman of the Section, conducted this meeting and called upon each committee chairman to give the highlights of his meetings. Both Chairman Knowlton and Vice-chairman L. J. Eck expressed their satisfaction at the accomplishments of the well-attended meetings.

To aid in the travel conservation effort and in line with recent rulings of the ODT, all meetings were limited to committee chairmen, vice-chairmen, subcommittee chairmen, and such local members of the committees who could attend. The primary purpose was to determine the status of the Section's work, with the thought that perhaps later in the year if conditions permit, full meetings of the various Technical Section Committees could be held. The preparation of annual committee reports for 1945 was discussed and tentative plans were outlined for Fall meetings.

The above meetings were preceded on Monday, June 4, by a meeting of T. L. Robey's Research Subcommittee, held in the morning of that day, for consideration of printing procedure for the four reports submitted by the Institute of Gas Technology on their assignments for the Research Subcommittee under the sponsorship of the Post-War Planning Cooperating Committee, of which J. V. Postles is chairman.

On the afternoon of June 4, F. J. Pfluke's Subcommittee on "Water Gas Reaction Research Projects"—a subcommittee of his Technical Advisory Committee of the Manufactured Gas Department—met for discussion of their subject.

Members of the Technical Section Managing Committee and guests at the June 6 luncheon meeting. In the picture are, left to right, front row: K. Fuery, J. V. Postles, Alexander Forward, C. S. Goldsmith, L. J. Eck, vice-chairman, Technical Section; Gladys Hanshaw, L. E. Knowlton, chairman, Technical Section; H. L. Gaidry, A. Gordon King, Secretary, Technical Section, and R. G. Griswold. Second row: A. C. Cherry, E. L. Hall, Leon J. Willien, Dr. E. W. Guernsey, R. Van Vliet, J. H. Collins, F. J. Pfluke, T. L. Robey, W. R. Fraser, and Dr. C. W. Wilson. Third row: S. Green, Linn Edsall, H. W. Gee, E. L. Henderson, W. H. Ligon, John H. Wolfe, and G. T. Bentley. Back row: B. D. Connor, E. L. Sweeney, R. E. Kruger, H. D. Lehman, S. P. Cobb, Wilbert J. Huff, J. M. Pickford, and J. M. Beall

Personal and Otherwise

Lt. Col. Stone Heads Stone & Webster

LIEUTENANT COLONEL WHITNEY STONE has been elected president of Stone & Webster, Inc., to succeed George O. Muhlfeld, who becomes vice-chairman.

Colonel Stone first joined the firm in 1930 and became an executive vice-president in 1936. In January, 1942, he resigned his position and directorships to join the Army Ordnance Department, and prior to his recent release by the Army he was deputy district chief of the Boston Ordnance District.

The new president is a son of the late Charles A. Stone who, with Edwin S. Webster, present chairman, organized the firm as a partnership in 1889. The firm, through subsidiaries, has long been a leader in the fields of investment banking, engineering and construction and utility supervision.

Mr. Muhlfeld has been associated with Stone & Webster for more than forty years and has served as president since 1931.

C. V. Sorenson President of Indiana Service Corp.

C. V. Sorenson

C. V. SORENSON, supervisor of new business for Northern Indiana Public Service Co., Hammond, Ind., has resigned effective July 16 to become president and a director of the Indiana Service Corporation, Fort Wayne, Ind. The latter is a predominately electric utility.

Mr. Sorenson is one of the best known sales executives in the gas industry, having devoted a large part of his great energy and talent to the advancement of the industry. As last year's chairman of the Residential Gas Section of the American Gas Association and first director of the Coordinated Gas Kitchen Program, as well as in his capacity as chairman of the Postwar Planning Subcommittee on Purchasing Power and Potential Markets, he has laid the foundation for an aggressive and effective postwar sales program. As a token of the industry's appreciation of his achievements, he received a black onyx desk set at the October 31, 1944 meeting of the Residential Section's Managing Committee.

He served as chairman of the A. G. A. Refrigeration Committee in 1941-1943 and was a member of the Residential Gas Section's Managing Committee, Mid-West Sales Council, House Heating and Water Heating Committees. He is a past president of the Indiana Gas Association.

Mr. Sorenson has had 15 years' experience in the operating end of both gas and electric utilities, starting in 1913. A subsequent 17-year period was devoted to utility sales management and market development.

Dee Is Sales Manager

WILLIAM DEE is now sales manager at Arlington (Mass.) Gas Light Co. Mr. Dee was graduated from Brown University in 1926. Following some years in sales work with Providence Gas Co., he joined the sales force of Salem Gas Light Co. in April, 1935, and became sales supervisor in January, 1937.

In September, 1939, he became sales manager for the Salem companies and served there until this appointment.

Elected Chairman of Water Heater Section

HAROLD HANDLEY, president and general manager of the Handley Brown Heater Company, was elected chairman of the Gas Water Heater Manufacturers' Section of the Association of Gas Appliance & Equipment Manufacturers at a recent meeting in Denver, Colorado. This Section represents all the leading water heater manufacturers in the United States. Mr. Handley, who has served as vice-chairman during the past two years, will take office as chairman October 1.

Active in the affairs of the American Gas Association, Mr. Handley is also a member of the Conversion Burner Manufacturers' Group of A. G. A. E. M.

Harold Handley

American Safety Award To Col. Stilwell

Colonel John Stilwell (left), vice-president, Consolidated Edison Company of New York, receives the Arthur Williams Memorial Medal from Frank L. Jones, chairman, Committee of Award, American Museum of Safety

COLONEL JOHN STILWELL, vice-president of Consolidated Edison Company of New York, Inc., received the Arthur Williams Memorial Medal of the American Museum of Safety at a dinner June 27 at the Waldorf-Astoria. The medal was presented to Colonel Stilwell by Frank L. Jones, president of the Greater New York Safety Council "in recognition of outstanding contributions to the conservation of human life."

This award of a gold medal was established by the late Arthur Williams, a vice-president of The New York Edison Company, for noteworthy effort in the safety movement. The award to Colonel Stilwell is the sixth made by the American Museum of Safety.

In 1937 he succeeded Arthur Williams as president of the American Museum of Safety and of the Greater New York Safety Council, serving until 1939.

Colonel Stilwell was elected president of the National Safety Council in 1939, being the first officer of a public utility company to serve in this capacity. Colonel Stilwell was president of the Council for four years. He had served as a director of the National Safety Council since 1937, and in October, 1944, at the end of his five terms as president, he was elected chairman of the board of directors of the Council.

In 1938 Colonel Stilwell became a member of the Committee on Organization and Public Relations of the Federated Safety Council of America. That year he was also elected a representative at large on the executive committee of the National Safety Council.

Cheevers Elected

E. LEE CHEEVER, industrial inspector, Southern Counties Gas Co., El Monte, Calif., was elected vice-president of the Southern California Meter Association at the June 21 meeting of that organization.

Home Service Director at New Haven

Patricia A. Galligan

APPOINTMENT of Patricia A. Galligan as home service director of the New Haven Gas Light Company, New Haven, Conn., is announced by P. J. Nasehold, sales manager. She succeeds Cornelia Newton who has been a member of the organization for the past 14 years.

Before going to New Haven, Miss Galligan was associated with Swift & Company, Chicago, Ill. She is a graduate of Iowa State College with a B.S. degree in Home Economics.

Direct Sales Activities of Pittsburgh Companies

W. L. Hutcheson

W. L. HUTCHESON has been advanced to sales manager and James E. Coleman has been appointed assistant sales manager of the Pittsburgh group of natural gas companies of the Columbia Gas & Electric Corp.

These personnel changes were announced on June 1, by C. E. Bennett, president of the Manufacturers Light & Heat Co., Cumberland & Allegheny Gas Co., Gettysburg Gas Corp. and the Natural Gas Company of West Virginia.

James E. Coleman

Mr. Hutcheson, since 1934 the utilities' merchandise sales-manager, will now supervise domestic and industrial gas sales, merchandising programs, home service activities and utility advertising.

The new sales manager has an extensive sales background in the gas industry dating from 1919 when he joined the Cities Service Company. His initial gas appliance selling activities were with this company in Bartlesville, Oklahoma. He later was concerned with various sales responsibilities for Cities Service in Topeka, Kansas City and Wichita.

In 1929 Mr. Hutcheson entered the employ of the former Columbia Engineering and Management Corp., and during the next six years he was active in sales promotion.

Mr. Hutcheson is a member of the American Gas Association and the Pennsylvania Natural Gas Men's Association.

J. E. Coleman joined the Manufacturers Light & Heat Co. as an industrial engineer in 1937 and was located in Steubenville, Ohio and Beaver Falls, Pa. Until he entered the Army in 1942, Mr. Coleman served the natural gas companies in the Pittsburgh Group in various industrial engineering capacities.

As a Captain in the Ordnance Dept., Army Service Forces, he was stationed in the Pittsburgh Ordnance District. Upon receiving his recent discharge, Mr. Coleman returned to the public utility group as assistant sales manager.

Scott Resigns From F.P.C.

COMMISSIONER John W. Scott of Indiana has resigned from the Federal Power Commission, effective June 15, to return to the private practice of law in the City of Washington. He will be associated with William M. Boyle, Jr., who was one of the counsel of the Truman investigating committee and for several years was Senator Truman's executive secretary.

Mr. Scott went to Washington in 1935, where he served for two years in the Department of Justice, as special assistant to the Attorney General in charge of utility matters for the Government, and for several months also served as head attorney for the Alien Property Bureau. President Roosevelt, in 1937, appointed him a member of the Federal Power Commission for the term expiring June 22, 1942, and reappointed him for a second five year term.

Pacific Directors

STOCKHOLDERS of Pacific Lighting Corporation, at their annual meeting in May, elected Le Roy M. Edwards and Robert A. Hornby directors succeeding A. B. Macbeth and Alfred Sutro, deceased.

Mr. Edwards is vice-president and general manager of the company and Mr. Hornby, a vice-president, is now a Lieutenant Colonel in the Army Air Forces on military leave.

F. E. Vandaveer Joins East Ohio

F. E. Vandaveer

ON May 31, Dr. F. E. Vandaveer, manager, Testing and Inspection Department, American Gas Association Testing Laboratories, resigned to join the staff of The East Ohio Gas Company. In his new affiliation, Dr. Vandaveer will assume responsibilities formerly handled by the late Charles F. Turner, chief chemist of this company, with headquarters in Cleveland. It is expected that he will continue to take a prominent part in Association activities through various committee assignments.

Associated with the Laboratories for the past 20 years, Dr. Vandaveer is widely known throughout the gas industry. Next to R. M. Conner, he was the Laboratories' oldest employee in time of service, joining the staff shortly after their establishment in 1925. At one time or another he headed every department of the Laboratories including testing, research and war work. From 1933 to 1937 he was located in Los Angeles in charge of the West Coast Branch. During his long period of service he directed publication of many gas research bulletins and was the author of numerous technical papers, articles and reports on various subjects connected with the utilization of gas.

Dr. Vandaveer's entire career has been in the gas industry. Specializing in gas fuel even during his undergraduate days, he studied at the University of Illinois under the direction of the late Prof. S. W. Parr, holding a fellowship sponsored by the former Illinois Gas Association. He received his B.S. degree in 1922 and his M.S. one year later. In 1925 he was awarded the degree of Doctor of Philosophy in Industrial Chemistry. Before joining the Laboratories he worked for several summers as a cadet engineer for The Peoples Gas Light and Coke Company in Chicago, under the supervision of R. B. Harper.

Dr. Vandaveer is a member of the American Chemical Society. For many years he has been active in Baptist church affairs serving as Trustee and Chairman of the Board of the Lakewood Baptist Church.

At a meeting of the Laboratories staff on May 31, Dr. Vandaveer was presented with a wrist-watch by his co-workers as an expression of their affection and regard.

Appliance testing activities previously in charge of Dr. Vandaveer will be supervised by K. H. Flint. He has been with the Laboratories for more than 19 years. A graduate of Amherst College, Mr. Flint also holds the degree of M.S. in Chemical Engineering awarded by the Massachusetts Institute of Technology.

Retires as President of Pittsburgh Companies

Franklin F. Schauer

FRANKLIN F. SCHAUER, president of the Equitable Gas Company, Pittsburgh, and the Pittsburgh and West Virginia Gas Company, retired June 1 after twenty-five years service with these companies. Mr. Schauer has been in ill health for some time and was unable to be in Pittsburgh on the occasion of his retirement. Company associates, however, sent him a bouquet of flowers and an attractive, leather bound book, containing photographs and best wishes of his staff and friends in affiliated companies, signatures, letters, and historical photographs. He is now living in St. Petersburg, Florida.

Born and educated in Philadelphia, Pa., where he attended Franklin Institute and Temple University, Mr. Schauer first entered the gas field in 1899, starting as a clerk with the United Gas Improvement Company of Philadelphia. He served that company successively as clerk, engineer, and foreman, until 1904, when he moved to Kansas City, Mo., as distribution superintendent for the Kansas City Gas Company. In 1907 he went to Syracuse, New York, in the capacity of distribution engineer for the Syracuse Lighting Company, but in 1910 he returned to the Kansas City Gas Company, where he remained until 1920.

On July 20, 1920, Mr. Schauer entered the employ of the Equitable Gas Company as assistant to the general manager. He was made general service manager of the Philadelphia Company in 1924, and on April 16, 1928, he became general manager of the Equitable Gas Company. The following year he became vice-president and general manager of the gas companies, which position he held until January 20, 1942, when he was made president of the Equitable Gas and Pittsburgh and West Virginia Gas Companies, the position from which he recently retired.

He is a member of the American Gas Association and the Pennsylvania Natural Gas Men's Association (director and past president).

Ward Perrott, president of the Louisville Gas and Electric Company (Delaware), and a director of the Equitable Gas and Pittsburgh and West Virginia Gas Companies, succeeds Mr. Schauer as president of the Equitable Gas Company, and also the Pittsburgh and West Virginia Gas Company.

Appointed Home Service Director at Seattle

Ruth Klumb

RUTH KLUMB has been appointed home service director of the Seattle Gas Company, Seattle, Wash. As a prelude to developing a full-fledged home service department, Miss Klumb recently completed a tour of Pacific Coast utilities, studying their methods of operation. She will operate under the name of "June Holladay" which has been adopted as a permanent department head's *nom de plume*.

A graduate of Washington State College with a B. S. degree, Miss Klumb obtained her M. S. degree at the University of Wisconsin. Since completing her schooling she has been engaged in educational and home service work. She was teaching supervisor in both the high school and college home economics departments at Pullam last year.

Get New Home Service Posts in California

TWO transfers in the Home Service Department of Southern Counties Gas Company, recently announced by Vice-President Norman R. McKee, became effective on June 15. At that time Dorothy Duncan took up her duties as home service director in the Orange County District, and Martha Jane Adcock assumed Miss Duncan's former position as home service director in Northern District.

Miss Duncan, who has been a member of the home service staff of Southern Counties since September, 1942, majored in home economics at Ohio University. Before going to California, she had a similar position with the Ohio Fuel Gas Company.

Miss Adcock is a native of California and took her preliminary schooling at Pasadena Junior College. She later attended Santa Barbara State College where she received her degree in home economics. Miss Adcock started her career with Southern Counties in the fall of 1943.

Becomes Air Conditioning Consultant

John deB. Shepard

JOHN deB. SHEPARD, air conditioning engineer, Consolidated Gas Electric Light and Power Co. of Baltimore, Md., and chairman of the Joint Committee on Gas Summer Air Conditioning of the Industrial and Commercial Gas Section and the Residential Gas Section, American Gas Association, has recently announced his resignation from both of these groups to be a consultant in air conditioning.

Mr. Shepard will be associated with P. L. Davidson, consulting engineer in air conditioning, specializing in the textile field. His headquarters will be in Greenville, South Carolina.

Mr. Shepard was an experienced air conditioning engineer in the public utility business before joining the Consolidated Gas Electric Light and Power Company of Baltimore. Previous to that he was air conditioning engineer for Carrier Corporation. Elsewhere in this issue will be found a review of Mr. Shepard's report, "Technical Advances in Gas Summer Air Conditioning."

Heads War Chest Drive

F. Milton Ludlow

F. MILTON LUDLOW, chairman of the welfare committee of Public Service (New Jersey), has been named general campaign chairman of the 1945 drive of the United War and Community Chest of Newark and West Hudson. The campaign goal will be set at more than $2,000,000 to be allocated to 22 National War Fund agencies and 76 local agencies of the Welfare Federation.

Mr. Ludlow has been with Public Service nearly thirty years and has been active in the Red Cross and American Legion in addition to the Community Chest. He is chairman of Local Board No. 34, Selective Service, and formerly was chairman of all the Selective Service boards in Newark.

He has served as commander American Legion Post 101 of Newark and also Essex County Commander and State Finance Officer. At present he is a member of the board of managers of the New Jersey Home for Disabled Veterans at Menlo Park. In World War I he was an instructor in the Marine Corps.

Buehrer Joins Evans

THE F. J. Evans Engineering Co. announces that Nelson B. Buehrer has become a new member of the firm with headquarters at the general offices in Birmingham, Ala. He will direct sales of heating and air conditioning equipment to the dealers and gas utilities served by the company throughout the south.

The new member of the engineering firm formerly was with Surface Combustion Corp., Toledo, O. Evans Engineering is manufacturer's agent for the Toledo company's complete line of products.

Feree Retires as Head of Gulf Public Service

L. FEREE, president, general manager and director of the Gulf Public Service Co., Inc., with general offices in New Iberia, La., has resigned as of June 1 and has retired from active service under a provision of this company. He has been identified with the company for 15 years.

Mr. Feree has been succeeded by C. J. Schexnayder who assumes the title of general manager and vice-president. Mr. Schexnayder is a native of New Iberia and has been associated with Gulf since 1926.

The retiring president, Mr. Feree, has been identified in the public utility field for forty-five years. He is a native of Pennsylvania and a graduate of Mifflin Academy in 1898.

Harris Heads Universal Oil Products

D. W. Harris

DAVID W. HARRIS and B. R. Muirhead were elected president and treasurer, respectively, of Universal Oil Products Co., at a directors' meeting in Chicago, May 22.

Mr. Harris and Mr. Muirhead resigned May 17 as president and treasurer, respectively, of Arkansas Natural Gas Corp., Shreveport, and its subsidiaries, which include several refining and allied manufacturing interests.

For more than 15 years, Mr. Harris has been one of the top officers of Arkansas Natural. From 1928 to 1944, he served the Arkansas Natural companies as vice-president and general manager. He became president of the parent company and its affiliates in October 1934. Before moving to Shreveport, he held several positions with Cities Service Co. and its subsidiaries in Denver, Bartlesville, Okla., and New York.

Mr. Harris is a vice-president and director of the Mid-Continent Oil and Gas Association, a director of the American Gas Association, and a counselor of the American Petroleum Institute.

Surface Combustion Shift

NEW assignments of duties in its Janitrol Aircraft Heater division are announced by Surface Combustion Corp. to meet the increasing military demands for combustion-type heaters.

In a three-way shift, J. W. Ashby has returned to the Columbus, Ohio, plant of the company as manager of application engineering. Mr. Ashby had been serving as Pacific Coast manager of engineering of the Janitrol aircraft division with headquarters in Los Angeles.

Also returning to the Columbus plant from Los Angeles is G. P. Mandel where he was application engineer on aircraft heaters. Burton M. Sharpe, who has been in the aircraft heater design engineering division at Columbus as a project engineer is replacing Mr. Mandel as aircraft application engineer on the west coast.

Miss Hanshaw Named Assistant Secretary

MISS GLADYS HANSHAW, who has assisted in the conduct of the Technical and Accounting Sections of the American Gas Association for a number of years, has been named assistant secretary of the Technical Section by Alexander Forward, managing director of the Association. In her new post, Miss Hanshaw will continue her active part in the Section's activities under the secretary, A. Gordon King.

For a period of years, Miss Hanshaw was secretary to the late H. W. Hartman, assistant manager of the Association who also handled the affairs of the Accounting and Technical Sections.

Philadelphia Men Win Life Saving Medals

THREE employees of The Philadelphia Gas Works Company, Joseph P. Dever, G. Warren Booz and Henry J. McCarthy, were recently honored for outstanding acts of life saving. Mr. Dever received the President's Medal of the National Safety Council, while Messrs. Booz and McCarthy were awarded McCarter Medals by the American Gas Association. Each of these men had revived persons overcome by gas.

Both the President's Medal and the McCarter awards are made for effective resuscitation by the Schafer prone pressure method but the former covers a broader field, as McCarter awards are only made in the gas industry. Employees of the Philadelphia company already have received 57 McCarter Medals and eight Certificates of Assistance.

Hobson Named Director of Arizona Commission

JR. A. HOBSON, JR., has resigned as director of the Richmond, Va., Department of Public Utilities, effective July 15, to become director of the Arizona Power Authority Commission. Mr. Hobson has been Richmond utilities director since October, 1938, taking the position under the administration of Mayor Bright.

Under Mr. Hobson's direction, a four-year plan for expansion and improvement of the city's gas facilities has been drawn up and Common Council has approved a $235,500 appropriation to be spent for that purpose during the next 12 months. Also under his direction, a plan for improving water facilities has been adopted and is now being put in effect.

Mr. Hobson is a member of the American Gas Association.

Conrad Elected President of United Light & Railways

FRANK L. CONRAD has been elected president of the United Light and Railways Company. Since 1939 Mr. Conrad has been serving as executive vice-president and director of the company and of the American Light and Traction Co. and the Continental Gas and Electric Corporation. He is also president of the United Light and Power Service Company.

Mr. Conrad succeeds William G. Woolfolk who becomes chairman of the board.

Smith Named

HARRY W. SMITH, JR., advertising manager of Selas Corp. of America, Philadelphia, has been elected vice-president of Eastern Industrial Advertisers. Prior to joining Selas, Mr. Smith was director of industrial publicity for the American Gas Association.

Bryant Men Advanced

C. F. Cushing

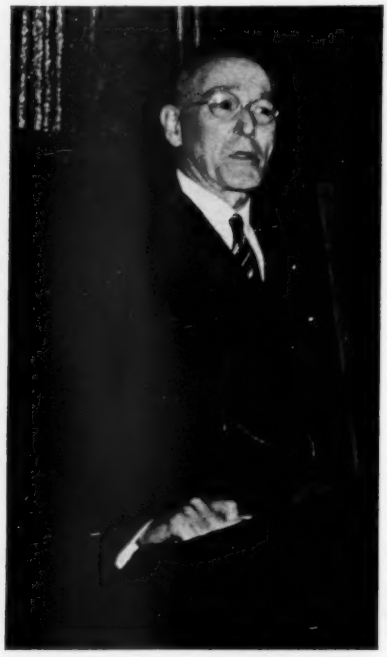
APPOINTMENTS of C. F. Cushing as distribution manager, and of James N. Crawford as sales manager of the Gas Heating Division, Bryant Heater Company, Cleveland, are announced by Lyle C. Harvey, president.

Mr. Crawford is a native of Cleveland and a graduate of Case School of Applied Science, where he became a member of Phi Kappa Psi Social fraternity, and the Tau Beta Pi, an honorary scholastic society. He holds a B. S. degree in mechanical engineering. A member of the staff of the American Gas Association Testing Laboratory following his graduation from Case, Crawford has been associated with the Bryant Heater Company for the past 12 years.

James N. Crawford

Mr. Cushing was born in Towson, Md., and attended The Johns Hopkins University, from which he was graduated with honors in mechanical engineering. He is a member of Alpha Delta Phi, and is active in the American Society of Heating and Ventilating Engineers, the Advertising Club and the Sales Executives Club of Cleveland. Formerly associated with the Frigidaire Corporation, Mr. Cushing has been a member of the Bryant Heater Company staff since 1935.

Canadian Gas Convention Outstanding



New C.G.A. President J. D. Von Maur

J. D. VON MAUR, engineer of distribution of Consumers Gas Co. of Toronto, and well-known "daddy" of the American Gas Association's annual Distribution Conference, was elected president of the Canadian Gas Association at that organization's thirty-eighth annual convention, which took place June 19-22 at Murray Bay, Quebec. Several hundred delegates attended the meeting which was one of the most interesting and successful yet staged in Canada.

Wilfred C. Philpot, general superintendent, Consumers Gas Co. of Toronto, and Thomas Weir, general manager, Union Gas Co. of Canada Ltd., Chatham, Ontario, were re-elected first and second vice-president, respectively. George W. Allen continues as executive secretary and treasurer. It was also voted to enlarge the board of directors from 10 to 12 members.

Many prominent gas industry executives from the United States participated in the meeting which was characterized by spirited discussions of many vital topics. Representing the American Gas Association on the program were: J French Robinson, president; John W. West, Jr., assistant managing director; R. M. Conner, director, A. G. A. Laboratories; H. Vinton Potter, A. G. A.-A. G. A. E. M. director, New Freedom Gas Kitchen Program; and Jessie McQueen, home service counsellor.

As the featured luncheon speaker President Robinson delivered an effective address on the theme of industry-government cooperation during the war. As examples of teamwork, he described the operation of the Petroleum Industry War Council, the construction of the Big Inch and Little Inch lines and other contributions in the battle for freedom.

A. G. A. Research Described

Mr. Conner described the gas industry's greatly enlarged research program while Mr. Potter narrated the steps being taken to safeguard and enlarge the gas industry's domestic cooking market. Under the title "For Sale—Halos for Gas Ranges," Mr. Potter spoke of the New Freedom Kitchen Program as "a crusade to show gas appliances at work in their most attractive settings." Miss McQueen called attention to the spread of influence enjoyed by home service as a result of its many new contacts during the war. Those contacts and new methods evolved during the war will give home service a potent postwar sales weapon, she said.

Alan H. Harris, Jr., manager, gas utility, Winnipeg Electric Co., and president of the Canadian Gas Association, gave a stimulating picture of Canada's war contributions and the work of the gas association.

Summarizing outstanding developments in gas appliance manufacture, A. W. Givin, vice-president, Gurney Foundry Co., Ltd., Toronto, said postwar buyers of gas ranges

Affiliated Association Activities

can look for higher standards of efficiency and performance, higher standards of convenience and safety, higher degree of cleanability, higher degree of comfort, and new and unheard-of beauty in design and finish. He warned, however, that no manufacturer should make the mistake "of subordinating performance and safety, convenience and cleanability, to beauty of design and finish in order to synchronize with the New Freedom Kitchen or any other planned kitchen program."

In his address "Planning for Postwar Sales," George S. Jones, Jr., vice-president in charge of sales, Servel, Inc., emphasized the Servel and A. G. A. sales training programs and concluded: "It is my firm conviction that the services rendered by the gas utilities of the country to its people, will be in direct proportion to the ability of the management to get the concept that in this day, and in this age, distribution and selling are the things that must receive preferred attention. It will be great to be a salesman in the postwar world!"

Speakers at the final session included E. D. Pellegrin, commercial artist, Woodstock, Ill., and E. Carl Sorby, vice-president, George D. Roper Corp. Mr. Sorby, in his usual brilliant fashion, summarized the need of higher quality gas ranges to provide consumers with the maximum in cooking results, and pointed out that "instead of worrying about competition and postwar products, let's sell our customer on the superior advantages we already have."

Attractive and well-planned entertainment features were provided by the Entertainment Committee headed by A. J. Strain. The Speakers and General Program Committee was under the chairmanship of H. W. Durgy.

Canadian "CP" manufacturers plan aggressive postwar promotion at 38th annual C.G.A. convention. Left to right: James I. Gorton, "CP" promotional director; C. M. Forrester, Gurney Foundry Co., Ltd.; J. M. Moffat, Moffats Ltd.; H. Leigh Whitelaw, managing director, A.G.A.E.M.; E. Carl Sorby, vice-president, George D. Roper Corporation, Rockford, Illinois; D. C. Ferguson, Clare Bros.; J. G. Beattie, Gurney Foundry Co., Ltd.; George E. Cross, Moffats Ltd.; G. W. Allen, executive secretary and treasurer, Canadian Gas Association

Advertising Group Elects Pope, Names Better Copy Contest Winners

E. N. POPE of the Carolina Power & Light Company, Raleigh, N. C., was elected president of the Public Utilities Advertising Association at a two-day business session of the organization held in the Edgewater Beach Hotel, Chicago, June 5-6. He succeeds Russell I. Seymour of the Kansas City Power & Light Company.

Other P. U. A. A. officers for the coming year are James V. MacDonald, Boston Edison Company, first vice-president; Charles J. Allen, Connecticut Light & Power Company, Waterbury, Conn., second vice-president; Robert Plowe, Commonwealth Edison Company, Chicago, third vice-president; Waldo M. Wright, Amarillo Gas Company, Amarillo, Tex., secretary, and Dale Remington, Wisconsin Public Service Corporation, Green Bay, Wis., treasurer.

New members of the board of directors are Mr. Seymour, Kenneth Haines, Northern Indiana Public Service Company, Hammond, Ind.; Robert Gros, Pacific Gas & Electric Company, San Francisco, Calif., and Henry Grant, Houston Light and Power Company, Houston, Tex.

Advertising Awards

Winners of the 1945 P. U. A. A. "better copy" awards were announced at the meeting by Mr. Plowe as chairman of the contest committee. Entries were judged this year on a nationwide, rather than regional basis. Each of 12 classifications was divided into four groups according to size of company business—Group A companies having less than 30,000 customers, Group B from 30,000 to 100,000, Group C from 100,000 to 400,000, and Group D with more than 400,000.

The winners are:

Series of newspaper advertisements, Group A: Salem Gas Light Company; Group B: Potomac Edison Company; Group C: Boston Consolidated Company; Group D: Commonwealth Edison Company.

Public relations advertisement, Group A: Central Ohio Light & Power Company; Group B: Louisiana Power & Light Company; Group C: Northern Indiana Public Service Company; Group D: Philadelphia Electric Company.

War effort advertisement, Group A: Amarillo Oil Company; Group B: Montana Power Company; Group C: Virginia Electric & Power Company; Group D: Brooklyn Union Gas Company.

Transportation advertisement, British Columbia Electric Railway Company Ltd.

Employee publication, Group B: Mississippi Power & Light Company; Group C: Cincinnati Gas & Electric Company; Group D: Consumers Power Company.

Periodical for residential customers, Group A: Central Ohio Light & Power Company; Group B: Potomac Edison Company; Group C: Northern Indiana Public Service Company; Group D: Brooklyn Union Gas Company.

Special literature, Group A: Central Ohio Light & Power Company; Group B: Central Hudson Gas & Electric Corporation; Group C: Duquesne Light Company; Group D: Northern States Power Company.

Display advertising, Group B: Wisconsin Public Service Corporation; Group C: United Illuminating Company; Group D: Southern California Gas Company and Southern Counties Gas Company (joint award).

Radio advertising, entertainment program; Puget Sound Power & Light Company; educational program: Oklahoma Natural Gas Company.

Annual report to stockholders, Group B: Wisconsin Power & Light Company; Group C: Dayton Power & Light Company; Group D: Consolidated Edison Company of New York, Inc.

Annual report to employees, Group C: Dayton Power & Light Company.

Outdoor advertising, Group B: Montana Power Company; Group C: Utah Power & Light Company; Group D: Peoples Gas Light & Coke Company.

Air Conditioning Meeting in Seattle

AT two recent meetings John K. Knighton, sales manager of the Air-Conditioning Division of Servel, explained to the building fraternity of Seattle the marvels of the year-round gas air conditioning unit.

Both meetings were held in the Home Service Auditorium of the Seattle Gas Company. Forty-four members of the Washington State Chapter of the American Institute of Architects, and members of the American Society of Heating and Ventilating Engineers were entertained at a luncheon, and fifty-one members of the Seattle Master Builders, and of the Banking fraternity were guests at a dinner meeting.

Preceding Mr. Knighton's discussion of the unit, N. Henry Gellert, president of the Seattle Gas Company, delivered a short address on the "Progressive Gas Industry," which was enthusiastically received.

Gasoline from Coal

A $50,000 miniature factory on the University of Kentucky campus at Lexington will soon be put in operation in an effort to prove that oil and gasoline can be made from coal and oil shale for sale at prices in competition with the natural product.

Prof. C. S. Crouse, head of the university's department of mining and metallurgical engineering, conceived the plant as a means of testing a process involving internal application of heat to the coal to produce the byproduct.

Most other coking processes use high temperature. The Crouse plant will employ a low-temperature method, producing a soft, smokeless fuel suitable for both domestic and industrial uses, in addition to more condensible gases from which gasoline and oil will be derived.

Crouse and his associates believe they are leaps ahead of other nongovernmental researches in this field. The U. S. Bureau of Mines has a pilot-plant and laboratory program aimed at the same goal.

Little Words !

● An idea is simple. And can be told simply. Only hazy ideas need many words. When there is no idea, six-ply words are useful. If we know just what we want to say there is bite and power in our words, as "Go to hell." But when thought is muddy writing is a row of tired phrases worn threadbare.

¶ Words were meant to talk with. Writing was an afterthought. A word is a grunt with meaning. That is why talking words are short. They shoot into the brain. A long word squirms and wriggles and gets nowhere.

¶ Shakespeare said, "To be or not to be, that is the question." Which covers quite a lot of ground.

¶ About the only art in writing is to get rid of phoney words and write the way people talk.

¶ The aim in advertising (what a word!) is to get ideas over fast. To jump into people's minds. To snap hold of interest as a spark leaps from wire to wire. A headline must do its work before eyes can blink.

¶ When advertising *talks* people know what is meant. If it's stilted they don't.

¶ An idea put down in a few short words is picked off the page at a glance. But a whole line of words that doesn't add up loses its grip on the mind. When phrase follows phrase in a jumble of commas and mixed-up thought the idea gets buried under the brushwood.

¶ Copy can be long enough to give the facts. People don't mind long copy if it's easy to read. Lucid, jolting little groups of words are like candy—when one pleases, you eat another.

¶ Ideas said simply sound honest and are believed. Adjectives are like lipstick—pretty but not on the level. A thing is what it is and pretty words can't make it any more.

¶ Little words have guts.

—Fuller & Smith & Ross,
1501 Euclid Avenue, Cleveland, O.

Obituary

JOSEPH P. HAFTENKAMP, operating vice-president of Rochester Gas and Electric Corporation of Rochester, N. Y., died on June 27, aged 64 years. He had been associated with the Rochester utility for 40 years, joining the staff shortly after his graduation as a chemical engineer from Michigan State College. In 1907 Mr. Haftenkamp became assistant superintendent of the company's gas plants and in 1919 was promoted to superintendent. In 1927 he became assistant general manager of the company and in 1934 was made vice-president in charge of operations.

Although nationally famous as a "gas man" Mr. Haftenkamp was one of the organizers of the Electric Association of Rochester, composed of local appliance dealers, and served as president. He was also prominent in the affairs of the Empire State Gas and Electric Association and filled important committee posts with various national associations, including the chairmanship of the Technical Section of the American Gas Association.

Mr. Haftenkamp is survived by his wife, Florence, and two daughters, Mrs. Kenneth Schlegel and Joan A. Haftenkamp.

CAPTAIN AMEDEE SPADONE, JR., headquarters 157th Field Artillery Battalion, was killed in action on April 27, 1945. He was formerly employed by the Public Service Electric and Gas Co., Newark, N. J. as a commercial cadet and was a member of the American Gas Association.

F. S. DEWEY, sales manager of the Cincinnati Gas and Electric Co., Cincinnati, Ohio, died May 27.

Mr. Dewey had been an active participant in American Gas Association activities for a period of years. He was a member of the Eastern Natural Gas Regional Sales Council from 1936 to 1942 and of the following committees: Domestic Range, 1936; Dealer Promotion, 1936; Appliance Financing and Dealer Relations, 1937; House Heating and Winter Air Conditioning, 1939; Refrigeration, 1940; and Residential Natural Gas Sales, 1941.

ROBERT THOMPSON, distributor of Ruud gas water heaters in the St. Louis, Mo. area died suddenly at his home there on April 24.

Mr. Thompson's first connection with the gas appliance industry was as a salesman for The Peoples Gas Light & Coke Company, Chicago, Ill. Later he was associated with the Chicago office of the Humphrey Company, travelled for them in the state of Illinois and then became the Humphrey distributor in St. Louis in 1919. In 1931, when the Ruud and Humphrey sales organizations merged, he became the Ruud distributor in St. Louis.

PATRICK H. GIBBONS, retired gas engineer, died in West Chester, Pa., at the age of 85. Medals were awarded to Mr. Gibbons at the Paris and the Columbian Expositions for papers on the manufacture of gas.

MRS. MABEL MILLER KING, wife of A. Gordon King, secretary of the Technical Section and of the Manufactured Gas Department of the American Gas Association, died May 30 in Stamford, Conn., hospital after a long illness.

John W. Batten

JOHN W. BATTEN, president of Michigan Consolidated Gas Company, Detroit, died July 1 following a brief illness.

A member of the Executive Board of the American Gas Association and past chairman of its important Committee on Industrial Gas Research (1941-1943), Mr. Batten had been active for many years in national association affairs.

Mr. Batten rose through the ranks to the presidency of Michigan Consolidated Gas Company, having joined the company in 1906 immediately after his graduation from the Univerity of Toronto as a chemist and mineralogist. He was elected president on Feb. 11, 1944 after serving six years as vice-president and general manager in charge of the Detroit district.

He was a past president of the Michigan Gas Association.

MYRON J. CZARNIECKI, vice-president in charge of sales for A. M. Byers Co., died suddenly on June 18 at his home near Pittsburgh. He was 53 years of age.

Mr. Czarniecki entered the employ of the Byers organization in 1913. He was advanced to general manager of sales in 1930 and his election to vice president in charge of sales came in 1934.

Mr. Czarniecki was a member of the Pittsburgh Sales Executives Club, the American Iron & Steel Institute, American Petroleum Institute, American Supply & Machinery Manufacturers Association, American Water Works Association, American Gas Association, Water & Sewage Manufacturers Association, Railway Business Association, Army Ordnance Association, and the Engineers Society of Western Pennsylvania.

GAS INDUSTRY RESEARCH

(Continued from page 309)

A. Investigate combustion characteristics of top burners under high altitude conditions.

B. Determine performance of contemporary ranges operating on butane gas under simulated high altitude conditions.

C. Complete the study of suitable means of joining two-piece burner heads and prepare requirements covering such joints and joint material such as gaskets and cement.

D. Finish investigation of protection of pilots from boilovers and extinction from drafts.

E. Investigation of tightness of gas ovens and broilers and effect of escape of products of combustion on top burner and oven performance.

F. Study effect of flue gas temperatures and angle of deflection of various flue deflector designs to afford adequate protection from wall discoloration.

G. Explosion relief studies on contemporary ranges.

H. Secure data on performance of gas ranges on high B.t.u. butane-air mixtures.

Where Work is Being Done

The research work in connection with the Association's 1945 program is being done by various groups and institutions among which are:

The Bureau of Mines
The Institute of Gas Technology
A. G. A. Testing Laboratories
Rutgers University
Selas Company
Surface Combustion Corporation
Purdue University
Battelle Memorial Institute

Summing Up

Summing up, we have accounted for research expenditures during the Association Year 1945 amounting to approximately $250,000 exclusive of the $50,000 mentioned for work in connection with Approval Requirements.

Other projects are being studied, and requests for allotment of additional funds will be made from time to time as the need arises.

In order that the general research program of the Association may be responsive to the needs of the gas industry, it is essential that it be flexible. During the course of the year, some projects may be dropped as the work progresses if it appears that the results hold little promise.

The Importance of Research Committees

I have pointed out that the secret of successful research is men. I think we can all be very grateful for the diligent efforts of the members of the various research committees of the American Gas Association who have given and are giving much of their time and talents in

developing the different parts of the program and supervising the progress of the work as it proceeds in the various laboratories and institutions.

What You Can Do

The matter of research is an industry-wide problem involving a joint effort on the part of both gas operating companies and manufacturers of equipment. I think all of you, as individuals, can contribute much to the success of the program in this way:

First—By following carefully the results as they are made available in the line of work with which you have responsibility.

Second—By giving the supervising research committees your ideas and suggestions as to the needs of the industry.

Third—By taking such steps as may be necessary to encourage manufacturers in building into their appliances new developments as they are brought to light by the results of research, because it is only in the application to appliances that the results of appliance research become of value to the industry.

Our business prospers and grows when we have a product to sell at competitive levels and modern appliances to cover the widest field of use and satisfaction for our customers.

NATURAL GAS IN CANADA

(Continued from page 323)

By 1923 rapid depletion of gas in the Tilbury field was taking place. After a special survey both the Union and Glenwood companies participated in a campaign of cleaning out and shooting the wells and plugging off encroaching water, thus restoring the field to excellent producing condition. It still provides a considerable amount of gas. R. L. Bevan, chief engineer for the Union Company, is credited with providing the individual initiative and persistent effort that resulted in the field's rejuvenation. He also participated in deep drilling operations for the Eugene Coste Exploration Company.

A number of other fields have been developed from time to time but despite this fact it has been necessary to adopt other methods of supplementing the available gas supply to meet increasing consumer needs since 1927. Tremendous demands for gas service associated with industrial war production in recent years, of course, have further taxed the whole industry.

The Union Company now supplies a mixture of natural gas, reformed refinery still gas, oil gas, and propane of approximately 1,000 B.t.u. in the Border Cities area. A Dayton oil gas plant was constructed in 1929 with a peak capacity of six million cubic feet a day and supplemented by a propane plant in 1943. Refinery still gas is obtained from the Imperial Oil Company, Ltd., with a still gas plant built in 1942 of nine million feet capacity on the St. Clair river at Sarnia. The off peak supply is stored underground in some sections of the Dawn field.

The Dominion Company was confronted with a similar situation in 1942 and installed a large propane plant near Brantford, approximately 20 miles from Hamilton. The storage capacity of this plant is quite extensive and the propane is used to good advantage during winter months to supplement the natural gas supplied various markets, particularly the eastern end of their system. Manufactured gas facilities in Hamilton have been greatly extended by the Dominion government as a war measure.

Both companies have engaged seismic experts in the hope that additional fields may be discovered by that method. The results, however, will not be known until further drilling is done. It is believed that the top of the Trenton limestone, which lies below a great thickness of shale, should be easily picked up by seismic surveys and that such surveys may find structures well worth testing.

Pending is a proposal by the Union Company to import more than five billion cubic feet yearly from Texas which would be delivered during the summer months and stored in the Dawn field. This would require construction of some 70 miles of transmission line including a line under the Detroit River connecting Union lines at Windsor with the present terminus of the Panhandle eastern system at Detroit.

CONVERTING TO LP GAS

(Continued from page 317)

This lagging of the meter was caused by the diaphragms becoming stiff as the gum and tar evaporated and left them dry. Later on, low bills were noticed and finally "dead" meters began showing up. The low bills were due to the dry diaphragm cracking and breaking so as to allow part of the gas to pass without registering. The break in the diaphragm gradually became worse until all gas passed through the break with none of it registering.

As the first meters were removed and their condition noted, a systematic rediaphragming of the meters was started. By the end of two years practically all of the easily rediaphragmed meters had been repaired. The older of the tin meters were junked because they had seen more than their normal share of service and were not worth rediaphragming.

The removal diaphragms in most cases had become so hardened by the evaporation of the gum and tar that the material could be broken like a chip by bending with the hands.

Pre-Conversion Recommendations

Since the main source of concern with the distribution system to be converted is from leakage, it is well to make certain recommendations.

If the manufactured gas system is in good order *before* the conversion the leakage will not be serious after conversion. The greatest trouble will lie in

Preparing for postwar sales, this billboard with a strongly worded message is currently being used by natural gas companies in Pittsburgh

small leaks now existing with the manufactured gas which are partly sealed off by the deposits in the lines. If these small leaks are repaired as they should be, the conversion should not offer any serious concern.

The latest and most economical method of locating leaks is by the "vegetation" method. A competent vegetation survey engineer can locate many leaks in a system in the course of a day's time.

It is heartily recommended that at least two surveys a year be taken on any system to reduce leakage to a minimum. This is especially to be recommended for at least a year before conversion to a dry gas such as LP gas.

Carbon Black Sales Up

INCREASING demand for synthetic rubber compounding, particularly in the late months of 1944, lifted sales and production of carbon black to new peaks, according to the Bureau of Mines, U. S. Department of the Interior.

Total sales expanded 49 percent over 1943 to 937,430,000 pounds and were 135,570,000 pounds more than production. Producers stocks were therefore depleted to 69,243,000 pounds at the year-end, the lowest level since 1928, and continued to shrink in the first quarter of 1945.

Production gained 35 percent over 1943 to 801,860,000 pounds, or 207,795,000 pounds above the old high in 1941. The output by contact processes increased 9 per cent in 1944, following a 3 year decline, but was 17 per cent below the record of 1940. Furnace black production continued to grow rapidly, increasing 81 per cent over 1943 to 387,184,000 pounds and equalling 48 per cent of total production of carbon black in 1944, compared with 36 per cent in 1943. All States except California reported a higher output of black in 1944, with the largest proportional gains in Kansas and Oklahoma.

Carbon black plants burned 355,770 million cubic feet of natural gas in 1944, a moderate increase (13 per cent) over 1943 compared with the output gain (35 per cent). The average yield of all grades of carbon black increased from 1.88 pounds per thousand cubic feet in 1943 to 2.20 pounds in 1944, influenced by the greater importance of high-yield furnace blacks. The average value of natural gas used by the plants advanced to 1.62 cents per thousand cubic feet, from 1.47 cents in 1943.

"Old Stuff"

● Coke was known to the Chinese over 2,000 years ago, which just goes to show that the Chinese are smart people. Actually, coke was first manufactured in regular ovens in 1620, in England. But not until 1700, eighty years later, did anybody think of saving the by-products.

In 1781 they were extracting "tar, pitch, essential oils, volatile alkali, mineral salts, etc.," and finally in 1792, William Murdock, father of the gas industry, made gas from coal in retorts. In 1812 London streets were lighted with gas; in 1834 the first gas was made from retorts in the United States; and in 1836 iron was made in this country, using coke exclusively as a fuel.

Today, gas and coke are helping our country to Victory. In the manufacture of shells or armor plate, gas plays an important part. To make cast iron, steel, aluminum or lead, coke is an essential ingredient. Like all good soldiers, gas and coke are fighting side by side against the axis. —*The Gas Flame.*

Northwest Natural Gas Prospects

IN the April issue of the Independent Petroleum Association monthly there appeared an article by Frank B. Taylor which discussed the possibilities of finding oil and natural gas in the Pacific Northwest. The Olympic Peninsula is mentioned as an important prospecting area both because of its geology and experience with several test wells. The whole coastal area of Washington and Oregon has similar possibilities. The next most favorable location is in Benton County in southern Washington where minor natural gas production has been obtained since 1913. The origin of this gas has not been satisfactorily explained. The chances of a strike are not good in eastern Washington and Oregon, Idaho or western Montana. Nevada is largely unknown to the oil geologist.—*P. C. G. A. News Letter.*

New Texas Gas Recovery Plant

CONTRACT has been awarded and construction has started on a $4,500,000 natural-gasoline absorption plant and gas-recovery system at Winnie, between Houston and Beaumont, by Glenn H. McCarthy, Houston operator. Contract was let to Stone & Webster Engineering Corporation.

Low-pressure gas will be collected by a pipeline gathering system from many wells in the north and south Stowell, Fannett and Fig Ridge fields and converted into components of aviation gasoline and other products.

Automatic controls and modern design are features of the plant in which provision is being made for expansion. The process equipment will consist principally of fractionating towers, pressure vessels, pumps and compressors.

Subject to delivery of critical equipment now being manufactured, the plant will go into operation in September, it was stated.

Switzerland Suffers

(The Gas World, London, April 28)

THE gas position in Switzerland has become almost pathetic. Coal stocks are miserably low and the new gas rations are quite insufficient. Further, the electrical apparatus producing industries have insufficient materials to meet the demand for electric cookers.

In Zurich the shortage of gas took a political turn recently, when the Communist Party demanded to be heard by the Municipal Council on the very question of gas rationing. The Council has opened soup kitchens so that those who cannot cook, owing to the gas shortage, may, at least, obtain a hot meal. This also created something of a stir. The poor are asked to give up one coupon for their soup, and they complain that for two coupons the wealthy can buy a first class meal in a restaurant.

The position should improve shortly, however, as Switzerland is now making new trade agreements with her neighbors.

SERVICES OFFERED

Operating Executive familiar with all phases of manufactured gas production and distribution. Knowledge of water and electricity operations and generally familiar with natural gas distribution would be helpful. Technical education and good experience required for an attractive opportunity. Give full details, age, etc., addressing reply to Alexander Forward, Managing Director, in full confidence.

Executive—Versatile, topnotch engineer—sales technical studies, rate surveys. Sales manager, manufacturers representative—18 years' experience industrial utility field. Minimum $7000. **1494.**

Salesman—Several years of experience selling to wholesale and retail trade and utilities in various territories. Ability and experience as sales promoter and manager. Complete knowledge of the appliance business. Interested in a substantial connection with lines of merit. Will consider any territories. Capable of planning a post war program. **1495.**

POSITIONS OPEN

Test Engineer—Gas and Electric Range Manufacturer requires the services of an experienced engineer familiar with A. G. A. testing laboratory procedures. Mechanical engineer preferred with knowledge of construction and testing for research laboratory. Permanent position. State age, experience and salary desired. **0418.**

Salesman—Travel up-state for manufacturer of automatic controls. Contact refrigeration and heating trades. Future assured right man. Salary and commission: Expenses. Write full particulars including yearly income expected in first letter. **0419.**

Manager of water gas property in city of 16,000. Location, North Carolina. Opportunity for post-war advancement. State qualifications. **0420.**

Experienced **industrial** and **commercial gas man** for office and contact work. New York area. **0421.**

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Sec.-Treas.—Edward W. Ruggles, North Carolina State College, Raleigh, N. C.

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